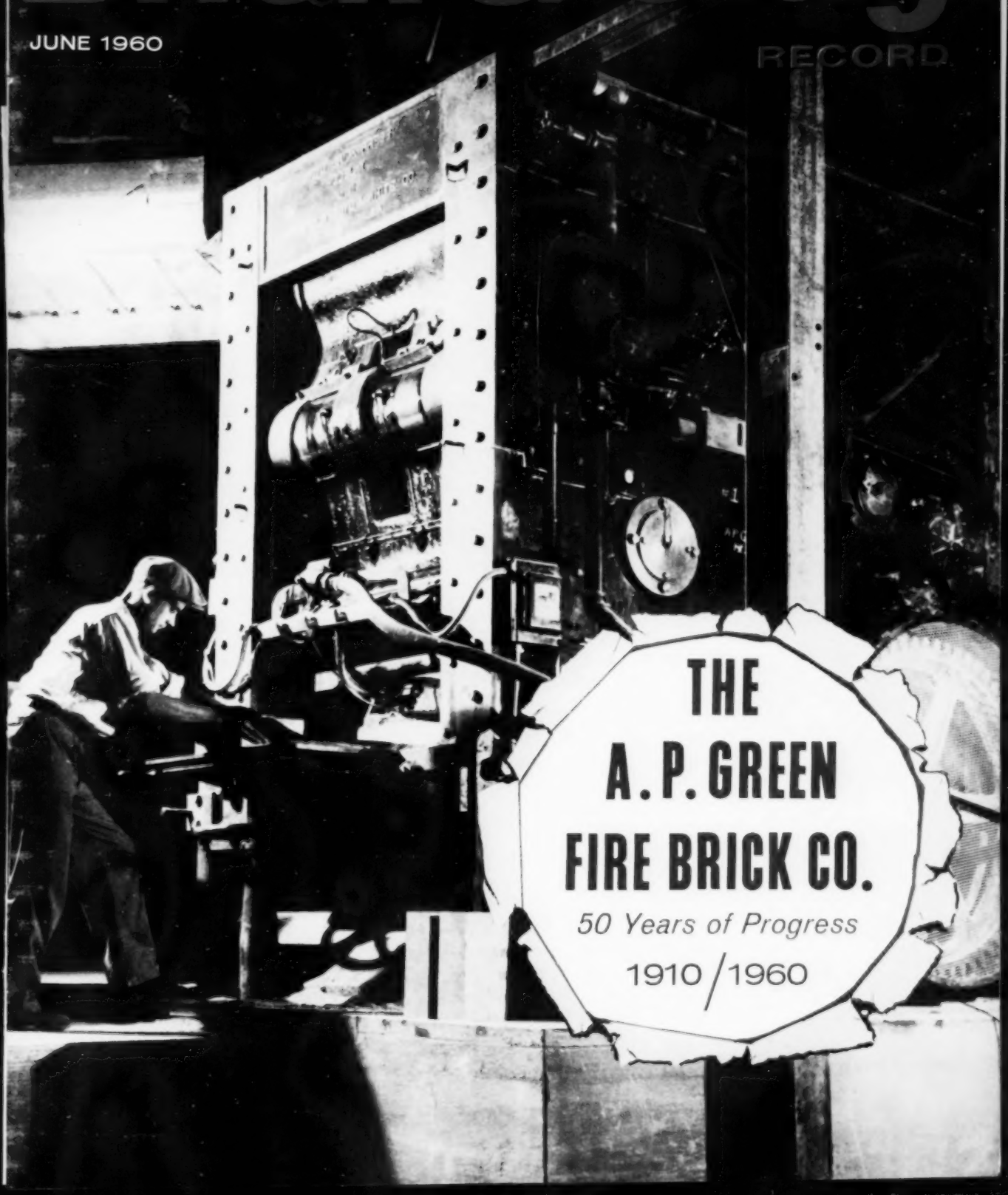
A CAHNERS PUBLICATION

Brick & Clay RECORD

JUNE 1960

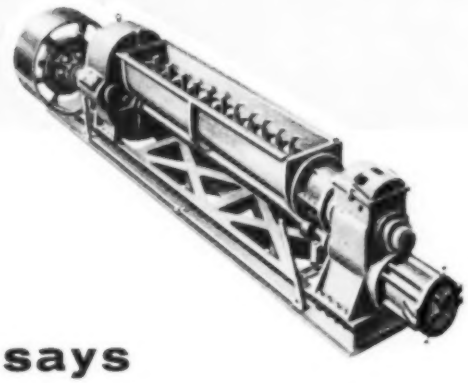


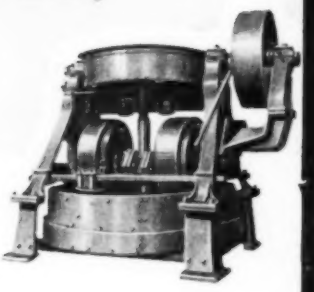
THE A. P. GREEN FIRE BRICK CO.

50 Years of Progress

1910/1960

"Wonderful Workhorses,"





says

ALTON BRICK

- management
- production
- maintenance

in reporting on BONNOT units at Maryland Heights Plan

—PRODUCTION OF MORE THAN 50,000,000 BRICK WITHOUT ANY DOWN TIME EXCEPT FOR REPLACEMENT OF NORMALLY WEARING PARTS.

—GRINDING OF NEARLY 2,000,000 TONS OF SHALE AND STILL GOING STRONG

These are two big reasons behind the title of "wonderful workhorses" bestowed on a Bonnot Greyhound Extruder and a Bonnot 10-foot Dry Pan by the management-production-maintenance supervisors at the Maryland Heights Plant of the Alton Brick Company in St. Louis, Mo.

Experience with the Bonnot Dry Pan covers 20 years—over 5 with the Bonnot Extruder. In addition to profitable dependability for maintaining rugged production schedules, the Bonnot Greyhound is completely satisfactory with either steam or oil dies—for all sizes of brick. With the Bonnot Greyhound, Alton shale is processed more accurately because it's practical to hold a higher vacuum . . . operating efficiency is increased because of easy accessibility of "wearing parts."

Bonnot engineers and machines will provide the same manufacturing economies for your plant. At Bonnot, your problems will get prompt attention, with the accuracy of the answers based on know-how gained by more than 70 years of service to leading clay processors throughout the U. S. A. Call, wire or write today . . . for greater profits during "the Soaring 60's"!

Circle Service No. 10

PLANT MANAGER M. P. HALL CHECKS THE BONNOT "ABSOLUTE GAUGE" (CONTROL) WHICH HE FINDS EXTREMELY VALUABLE IN PRODUCING THE QUALITY-TEXTURED RED BRICK FOR WHICH ALTON'S MARYLAND HEIGHTS PLANT IS FAVORABLY KNOWN.

PRODUCTION MANAGER TED SCHUTTENBERG (LEFT) JOINS PLANT MANAGER HALL AFTER A "QUICK CHANGE" FROM STANDARD TO NORMAN DIE ON "THE BONNOT WORKHORSE."

DRY PAN OR EXTRUDER, BONNOT MACHINES GET AN "AROUND THE CLOCK VOTE OF CONFIDENCE" FROM ASST. SUPERINTENDENT RUSS RICHARDSON, WHO REPORTS BONNOT EQUIPMENT "EASIEST TO HANDLE" IN HIS MANY YEARS OF CLAY-PROCESSING EXPERIENCE.

STEP AHEAD WITH BONNOT

The BONNOT Co.

CANTON 2, OHIO

CRUSHERS	AUGER MACHINES	
HAMMER MILLS	VACUUM MACHINES	
DRY PANS	SPECIAL EXTRUDERS	CUTTERS
WET PANS	PUG MILLS	REPRESSES
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MISSISSIPPI BRICKMAKER SPEEDS PRODUCTION WITH ADDITIVE-A®!

HATTIESBURG, MISSISSIPPI—"Hattiesburg Brick Works was the first plant in the state to adopt the full-time use of Additive-A clay conditioner," says vice-president, A. G. Collins. "Additive-A has shown excellent results in speeded-up production, increased green strength and decreased dryer loss. It helps us to make a finished product we are extremely proud to show our customers."

For descriptive folder on Additive-A, write to:
Chemical Products, Department No. BCR-60
Kimberly-Clark Corporation,
Neenah, Wisconsin

Kimberly-Clark Corporation Contributing Associate S C P I
Circle Service No. 11

Never has there been a kiln car wheel to earn the industry's confidence as has the S-D "FLOATER"

"We think the best way to recommend or compliment S-D 'Floater' Wheels is to walk up to a loaded car and push it with one hand."

. . . says Mr. Homer Bryce, General Manager,
Henderson Clay Products Company
Henderson, Texas

"We have had excellent results with the Sanford-Day "Floater" Wheel. The first S-D Wheels we started using three years ago are still running as free as they did the first trip through the kiln."

. . . says Mr. C. B. Foushee, Sanford Brick and Tile Co.,
Sanford, N. C.

"We have congratulated ourselves many times on selecting your wheels and bearings for this operation."

. . . says Supt. C. H. McDonald, West Brothers Brick Company,
Fairmont Heights, Maryland

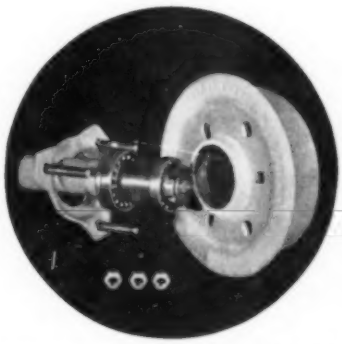
"We are very much sold on Sanford-Day's Wheel and Bearing Assembly. From our experience and information we have gathered from other plants we are expecting years of trouble-free service."

. . . says Supt. Alvin Warden, W. G. Bush Co., Nashville, Tenn.

"We are well satisfied with our S-D Kiln Car Wheels"

. . . says Plant Engineer Philip D. Pearce,
Boren Clay Products Co., Pleasant
Garden, N. C.

Now you can eliminate old and obsolete kiln car wheels and their costly everyday maintenance and lubrication by using S-D "Floaters"—developed and PROVED in scores of kilns for trouble-free high temperature performance.



The S-D "Floater" Ball Bearing Kiln Car Wheel successfully incorporates (1) completely closed outer hub, and (2) inner hub completely protected by two metal grease seals. These exclusive features effectively eliminate dust while retaining the special high temperature lubricant.

Many sizes and styles are available so that you can use S-D "Floaters" on your present cars. Also available with tapered roller bearings. Ask us for complete information. Or, send us photostatic copy or blueprint of your present cars. With this information we can quote you on replacement wheels now. Simply address inquiry to *Sanford-Day Iron Works, Inc., P. O. Box* 1511, *Knoxville, Tenn.* Your request will be handled promptly.

SANFORD-DAY
KNOXVILLE **TENNESSEE**

Circle Service No. 12

LEADING CLAY JOURNAL OF THE WORLD
A CAHNERS PUBLICATION

Brick & Clay RECORD

JUNE, 1960

Vol. 136, No. 6

5 SOUTH WABASH AVE.
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now in 68th year.

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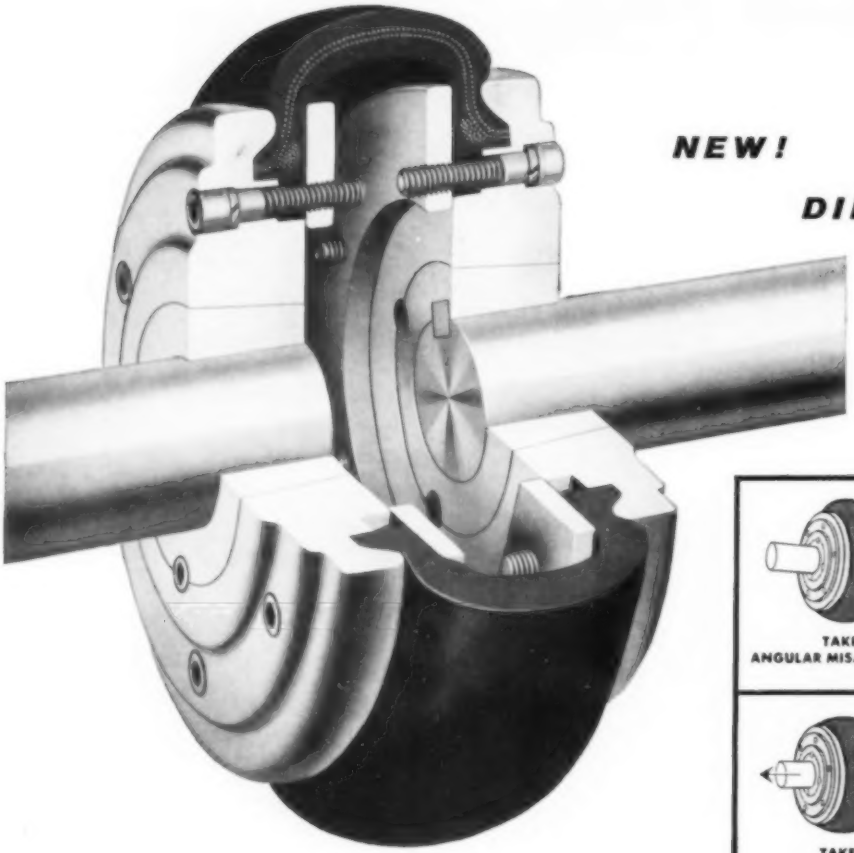

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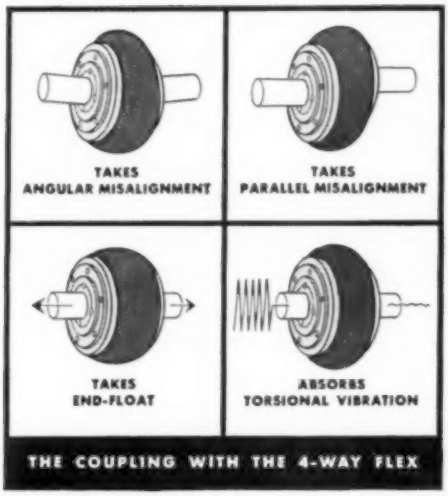
DIFFERENT!



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Para•flex

FLEXIBLE CUSHION COUPLING

THIS coupling "swallows up" shaft misplacements. It automatically compensates for end-float, parallel misalignment, angular misalignment *or any combination of all three.* Moreover, it cushions the stresses of shock loads. And it absorbs torsional vibration—reducing noise and protecting machinery from vibration's destructive forces.

Here is a new type of performance—made possible by the development of a tire-like flexing element. Synthetic tension members, bonded together in rubber, give this element the stamina and dependability of modern, high-speed, high-load, shock-absorbing truck tires—and the ability to respond magically to all manner of changing shaft conditions.

Para-flex takes minimum space on the shaft. Mounting is simplified through the use of standard Taper-Lock bushings—no reboring, no machining. Safety is promoted by flush design; there are no protruding parts. No lubrication is required, no periodic inspection. And since the flexible member is molded with a transverse split, it can be replaced *without moving either the driver or driven machine.*

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DODGE

of Mishawaka, Ind.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the *white* pages of your telephone directory, or in the yellow pages under "Power Transmission Machinery."

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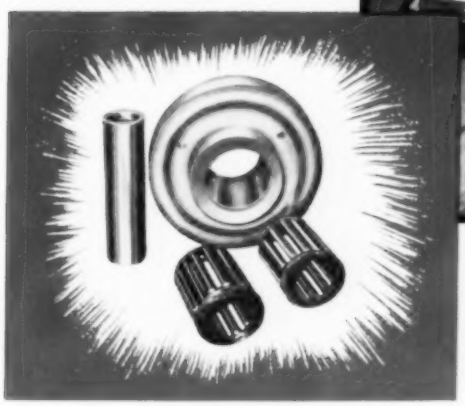
HI-TEMP 2409

keeps A. P. Green kiln car bearings...

ROLLING FREE!



Loaded car entering 2600°F. to 2700°F. tunnel kiln at A. P. Green and dismantled bearing after 4 months' operation with Hi-Temp 2409.

More than a year ago, the A. P. Green Fire Brick Co. started to use Houghton Hi-Temp 2409 in their kiln car bearings. After 4 months' operation at wheel temperatures between 600°F. and 750°F., the lubrication supervisor found "nice, coated, bright journals and bearing rollers free".

This performance is due to the fact that Hi-Temp 2409 is a synthetic grease made up of fine particle size graphite and clean burning, non-petroleum carriers and stabilizers. It differs from petroleum greases in that the *thickener is the lubricant and the fluid is the vehicle* to carry the lubricating thickener to the bearing surface.

If you operate kiln cars or have any other high temperature lubricating problem ranging from 500°F. to 1000°F., write for complete information on Hi-Temp 2409. E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

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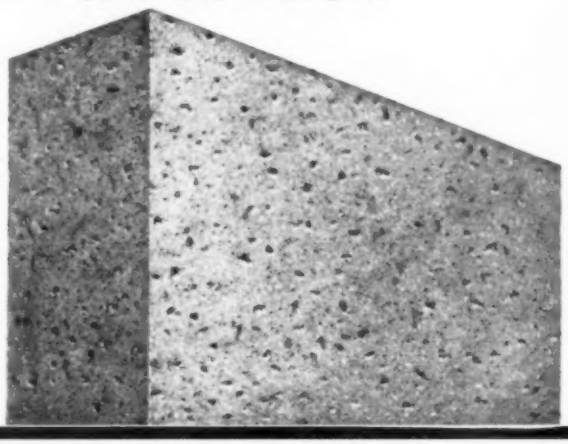

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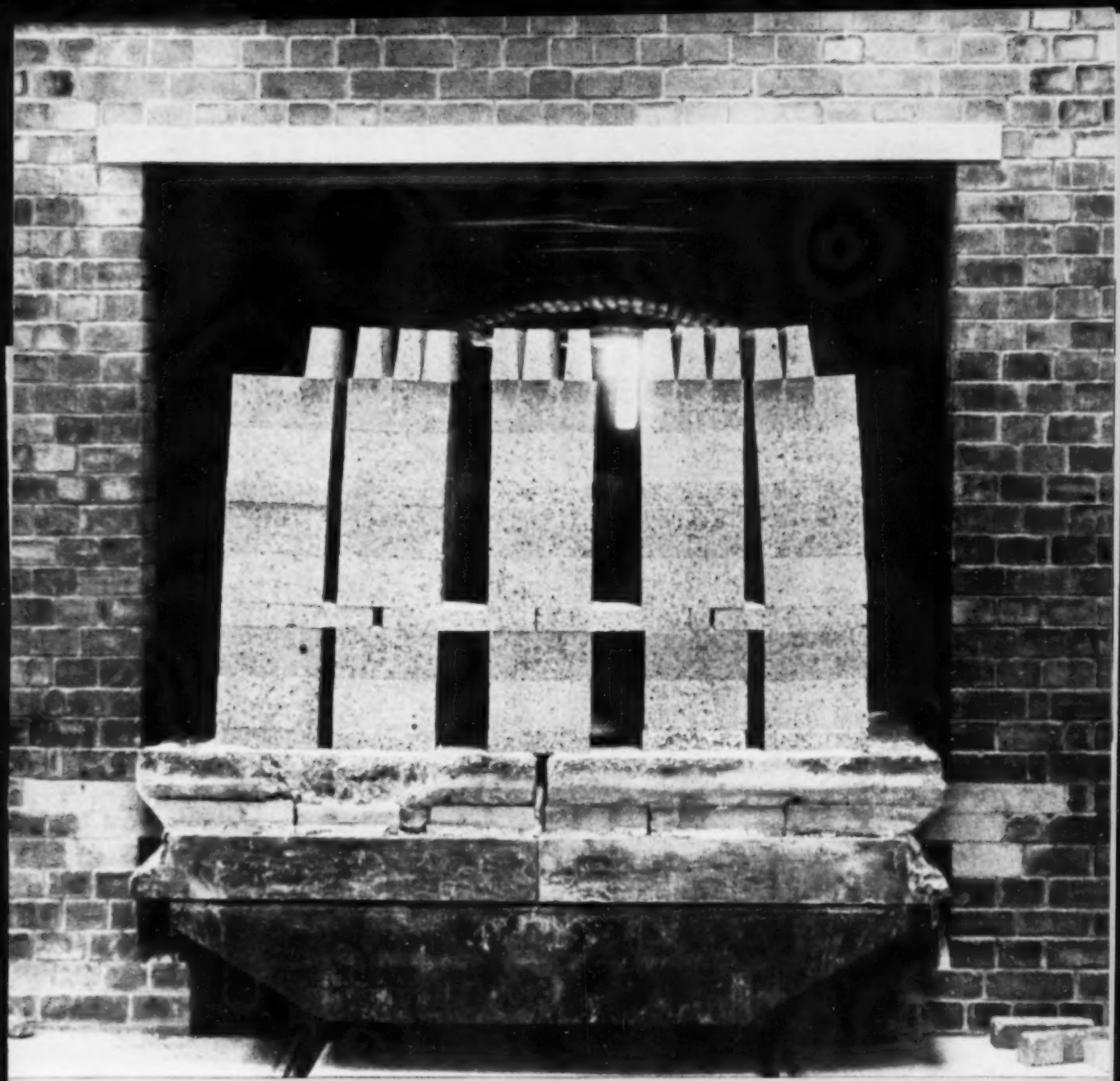
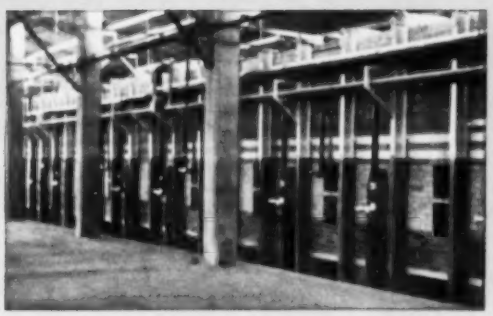


Inside Story

For more than a quarter century, **Allied** kilns have helped raise and maintain quality standards for the **A. P. Green** Fire Brick Company.



FERRO

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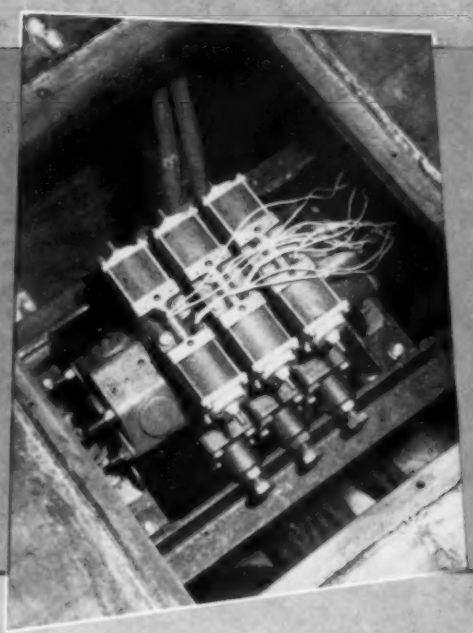
Meet the ALL-NEW

CURTISS-WRIGHT HAWK

NEW and SMOOTH

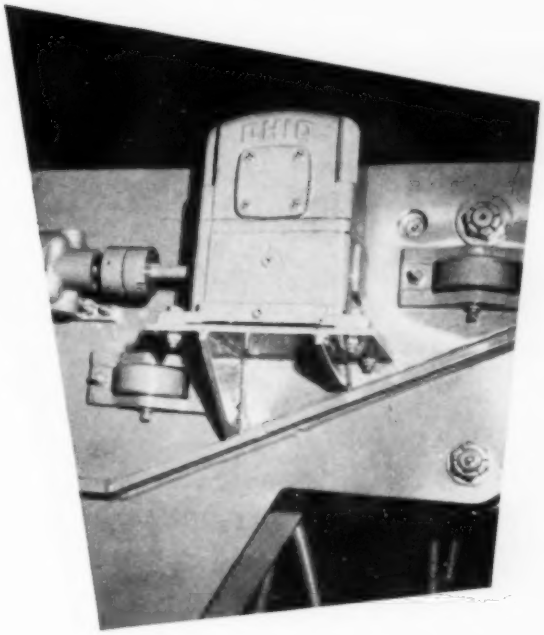
HAWK
LOADER and UNLOADER

The all new Curtiss-Wright Hawk is designed to provide every feature that block handlers want in a loader-unloader. That is why the new Hawk is by far the best performing, easiest operating machine in the field. Call your Hawk distributor today. Let him show you what high block moving production really is with the all new all-ways-better Curtiss-Wright Hawk.



HYDRAULIC STACK VALVE ASSEMBLY IS EASILY ACCESSIBLE THROUGH PLATE IN TRUCK BED.

- Retractable boom for fast load placement even under the most adverse conditions.
- New boom length for increased distance of load placement.
- Full hydraulic system for easy, trouble-free operation.
- Remote and built-in control stations for operating convenience.
- Pitched bed for shift-free load carrying.
- Completely self-contained unit for easy mounting.
- Available for the largest selection of trucks.
- Easily accessible hydraulic flow and pressure controls.
- Economical, one-man operation.
- Clean, space-saving design.
- Complete set of clearance lights and reflectors built into bed.
- Strong, rigid beam and channel frame bed, built for maximum strength and minimum weight.
- Strong grill cab guard prevents damage to truck.



EXCLUSIVE HAWK HYDRAULICALLY POWERED RETRACTABLE BOOM MAKES LOAD PLACEMENT EASY.

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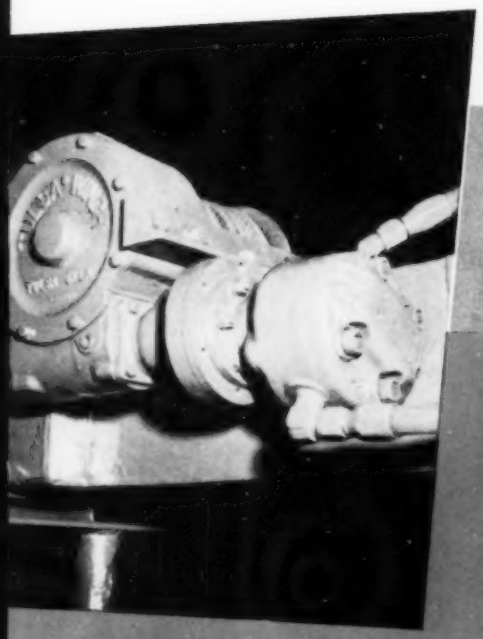
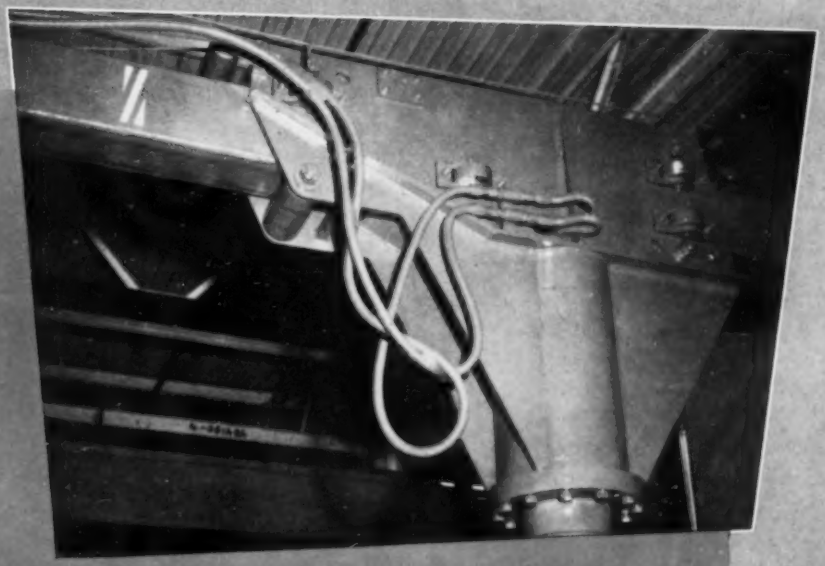


HYDRAULICALLY POWERED, WORM GEAR DRIVEN WINCH PROVIDES SAFE, SMOOTH OPERATION — LOWERS 15 FEET BELOW GRADE.

HEAVY DUTY CONSTRUCTION OF HEAD, TYPICAL OF ENTIRE UNIT, ASSURES LONG MAINTENANCE-FREE MACHINE LIFE.



SOUTH BEND DIVISION **CURTISS-WRIGHT CORPORATION** SOUTH BEND, INDIANA

Photo shows PACO 4½" x 8" x 9" car tops set on end and used as perimeter block. Top deck is constructed with 4½" x 8½" x 18" PACO car tops. Each corner has a 7" x 8½" x 9" cored corner block. Perimeter and corner blocks are filled with lightweight insulation.

PACO CAR TOPS can cut your replacement costs as much as 50%—and increase your profits! The reason is simple. Paco Car Tops are made from the mineral pyrophyllite. This unusual, superior raw material permits the manufacture of thinner wall, larger core car top that is lightweight, stronger and highly resistant to extreme thermal shock.

PACO CAR TOPS do not have a softening point below actual fusing point, providing greater resistance to hot load deformation. The result is better, more efficient production. Paco Car Tops are easy to handle and install, and simple to replace individually as needed.
There is a PACO engineer as close as your telephone—or write for complete information!

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Ceramic data book

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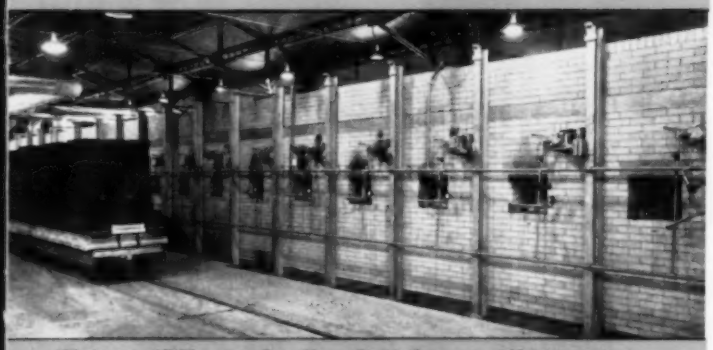
OTHER PACO PRODUCTS INCLUDE: • Paco Plastic • Pacocast • Paco H.T. Cements • Paco Fire Brick Mortar • Paco Side Car Brick • Paco Fire Brick • Paco Ladle Lining • Paco Heatzone Compound

Circle Service No. 18

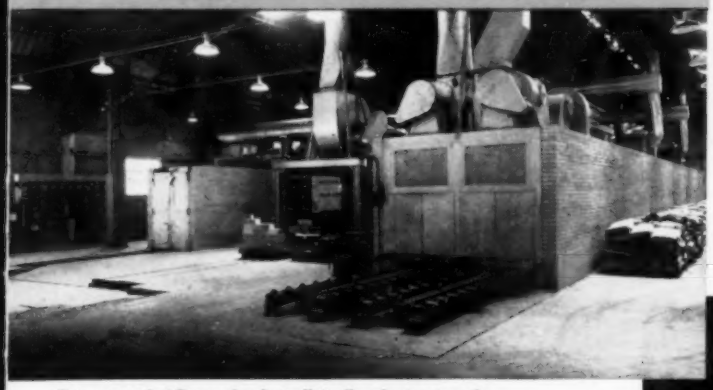
FOR A. P. Green Fire Brick Company's FIRST BASIC BRICK PLANT

Tarentum, Pennsylvania

General view, exit end of Dressler Dryer and entrance end of Kiln



Kiln features 100% recuperation with excellent fuel economy at high temperature



Entrance end of Dryer, showing pallet rollers for two tunnels

THIS COMPLETE

DRESSLER KILN and DRYER

unit load processing system

Designed to meet requirements for expansion in diversified products, this compact, flexible basic brick plant is built at the center of a major market. The Dressler Twin Tunnel Dryer is 98′ long, handles palletized ware, and is used both for brick to be fired and for chemically bonded brick. Unit loads from dryer are fired in the high temperature Dressler Tunnel Kiln, 157′ long, with operating temperatures up to 3000°F. ● What are *your* special firing requirements?

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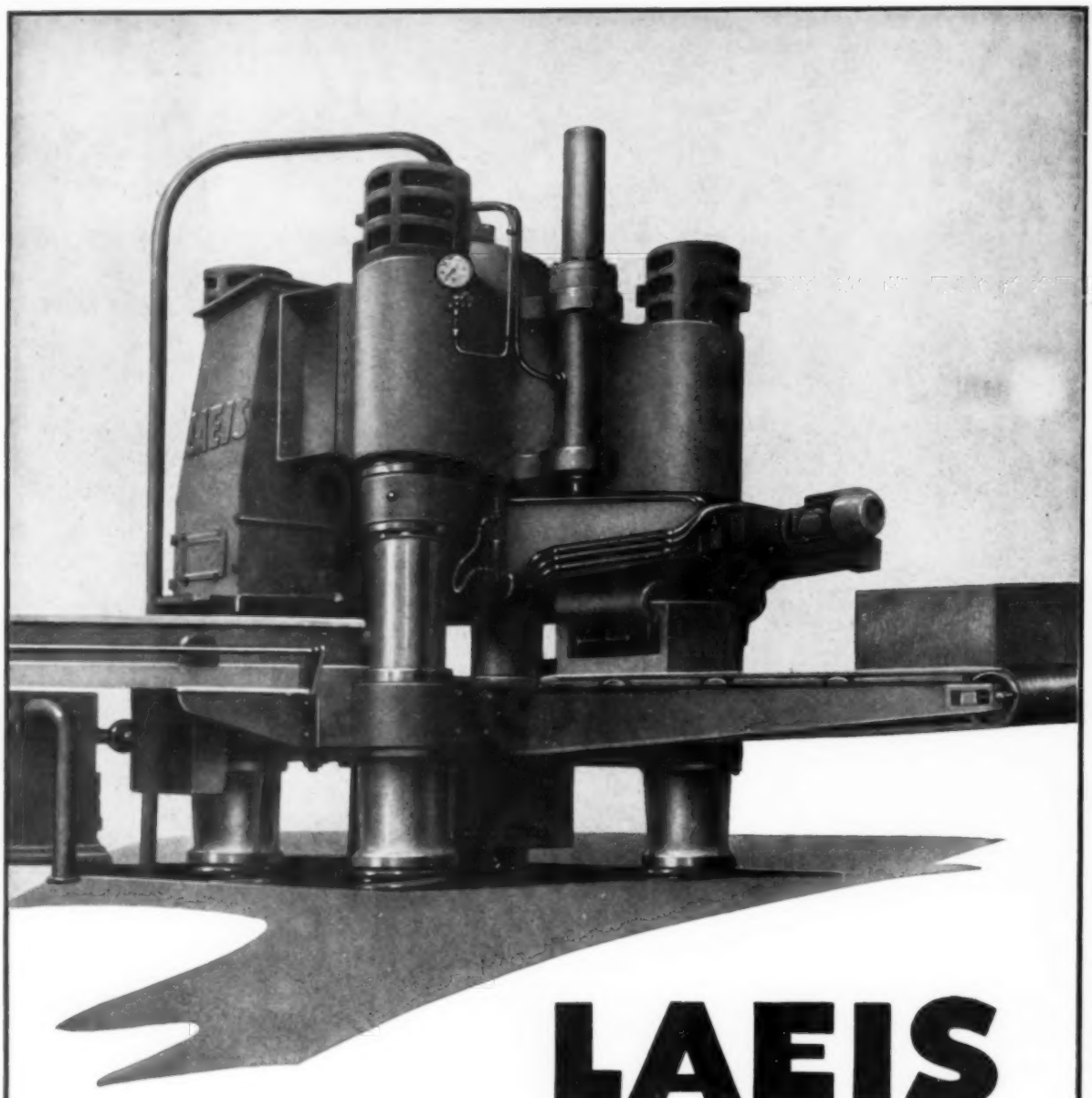

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Increase Your Payloads . . . On Long Hauls Or Short . . . With The **PACK-HAULER®**

It's almost like magic . . . the way one operator can load and unload 6,000 brick . . . in a matter of minutes . . . with the Pack-Hauler.

The tandem Pack-Hauler unit is easily mounted on any truck chassis, delivers cubes at any job site . . . on roughest terrain.

Reduce your truck fleet, make more hauls with bigger payloads . . . and pick up more profits with the Pack-Hauler.

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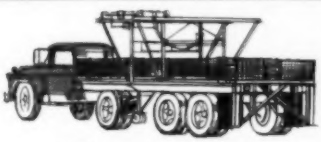
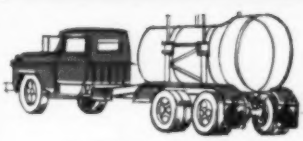


CRANE-HAULER

SINGLE



PIPE-HAULER

PACK-GRAB

Circle Service No. 21

Twin-tunnel dryers and kilns . . . by Harrop . . . typical of the 12 Harrop installations for A. P. Green Fire Brick Co., Mexico, Missouri, and its subsidiaries.

A. P. GREEN dries and fires in 12 Harrop tunnel dryers and kilns...

First Harrop unit for A. P. Green was installed in 1925. In the years that have followed, among all A. P. Green installations a total of 12 kilns and 12 dryers have been installed by Harrop for A. P. Green Fire Brick Co., its Valentine Fire Brick Co. Division, and Keramos, S. A., an affiliated company. And a number of other kinds of jobs have come to Harrop from Green in those same years.

Such repeat buying over so many years is an expression of confidence in Harrop design and installation . . . a confidence earned 22 times over as Harrop has carried out 22 different assignments for Green.

You, too, can expect to have Harrop earn your confidence when you come to Harrop with your problem. When it's a matter of the drying and firing of ceramics, Harrop has the answers, in which you can place your confidence. For complete information, write us today.

Practical Ceramic Engineering, Put Profitably to Work

HARROP

Harrop Ceramic Service Co.

35 East Gay Street **Columbus 15, Ohio**

BRITISH ASSOCIATE: British Ceramic Service Co., Ltd., Bricesco House, Stoke-on-Trent, England

HARROP PRECISION FURNACE COMPANY, 3470 East Fifth Avenue, Columbus 19, Ohio . . . Laboratory, Industrial and School Furnaces

TUNNEL KILNS ■ DRYERS ■ PLANT DESIGN

Circle Service No. 22

high temperature air jobs

call for Buffalo Specialized Fans

Throughout the ceramic field, you'll find Buffalo Fans doing the **punishing** jobs where temperatures, pressures and air moving loads are high! That's because we **engineer** each fan to the job.

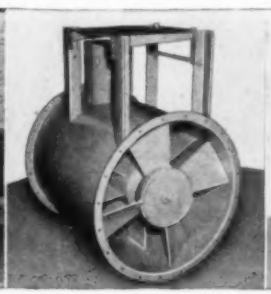
This may require wheels and blades of special material — extended shafts for operation through a kiln wall — shaft heat "slingers" — or in extreme temperatures, rugged Buffalo water-cooled bearings. We're equipped to design such special features into the complete line of Buffalo centrifugal, axial flow and propeller fans to meet almost any requirements you may have. In addition to the special fans shown here, Buffalo Industrial Exhausters, "E" Blowers, Pressure Blowers and Volume Fans are performing to complete satisfaction on all types of ceramic applications.

Your nearby Buffalo Engineering Representative will give you complete details and recommendations on your particular air handling problem or write direct.

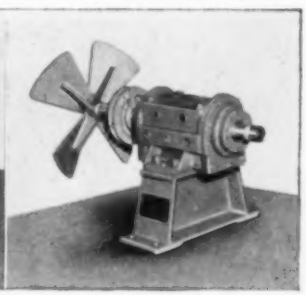
Handling 700° F. air at large refractories plant — Buffalo Type BL Fans.

Dryer recirculation on tunnel car kiln. Type NV with extended shaft.

15,000 CFM at 360° F.—Tube Propeller between kiln walls at brick plant.



Up to 1600° F. air—Type NV stainless steel fan with water cooled bearings and shaft heat slinger.



"Buffalo"

BUFFALO FORGE COMPANY

Buffalo, New York

Buffalo air handling equipment to move, heat, cool, dehumidify and clean air and other gases.

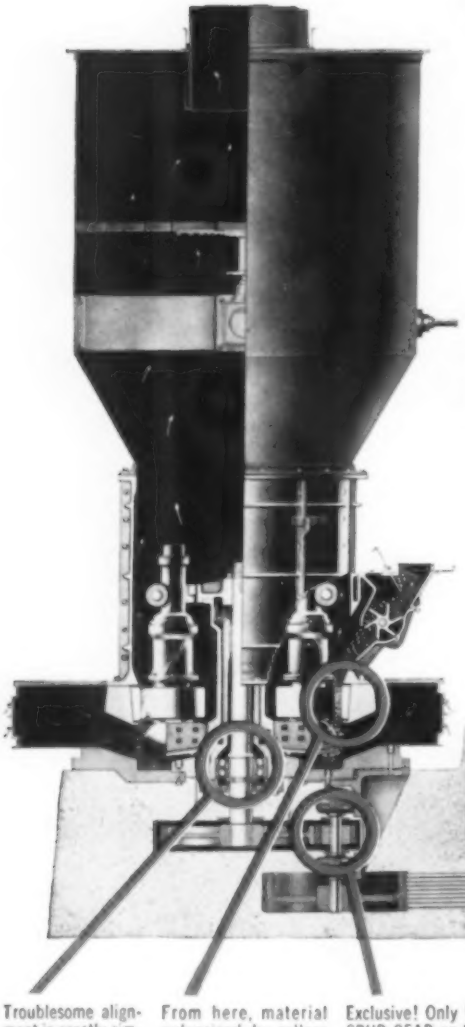
Buffalo Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.

Buffalo Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.

Squier machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.

Circle Service No. 23

Higher output on FINE GRINDING..20 to 400 mesh.. with WILLIAMS ROLLER MILLS



A Williams does the entire job in a single continuous operation—from feed through grinding, blending, drying and classifying!

- ✓ Centrifugal grinding roll action against bull ring keeps production high—automatically compensates for wear
- ✓ Positive-flow feed control is self-adjusting—maintains maximum capacity of mill
- ✓ Instant external fineness adjustment can be made while mill is in motion
- ✓ Continual upward air sweep to classifier prevents clogging build-up of finely ground material. Mill operates under vacuum to insure dustless operation.
- ✓ Automatically controlled hot air is available for drying and increased output of moist material.

These, plus many other advanced features keep Williams Roller Mills far ahead in higher production, lower costs. less downtime and maintenance. *Write for catalog.*

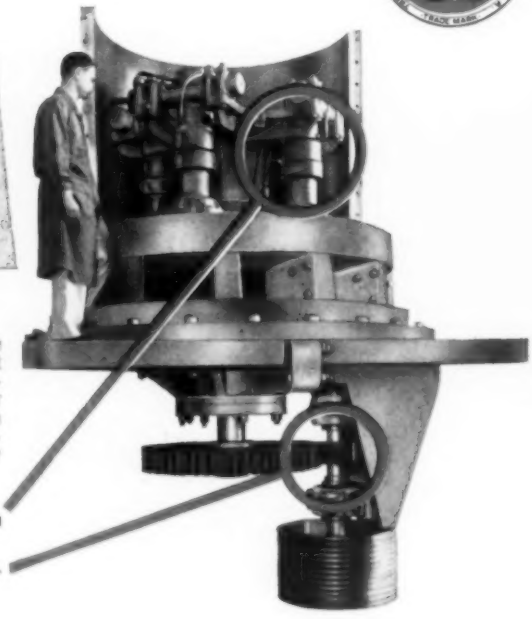
WILLIAMS PATENT CRUSHER & PULVERIZER CO.
2709 N. Broadway • St. Louis 6, Mo.

Oldest and largest manufacturers of hammer mills in the world

Troublesome alignment is greatly simplified and far less frequent with only 2 bearings on main shaft; the bottom one carrying both radial and thrust loads.

From here, material pulverized by rollers against bull ring are air-lifted to classifier which passes correctly sized product and returns coarse material for regrinding.

Exclusive! Only Williams has longer-life SPUR GEAR or GEARLESS DRIVES that eliminate expensive bevel and other hard-to-maintain gears. Standard and larger models have rugged spur gear and pinion drive—smaller models have direct motor-to-shaft V-belt drive requiring no care or lubrication.



"Giant" mill with cover section off show roller journals which suspend grinding rolls on bearings sealed against dirt and grit. Note wear-resistant steel forged bull ring.

Housing is also removed to show rugged spur gear and pinion drive. Easy, quick accessibility for service is another Williams time and money-saving feature.

WILLIAMS
CRUSHERS GRINDERS SHREDDERS

Hammer Mills | Hekx-Seal Mills | Air Separators | Vibrating Screens | Feeders | Impactors

Circle Service No. 24

NEW PRODUCTS

Ceramic and Clay Marker

A roll die fixture which will mark ceramic flue liners and other ceramic products as they are being extuded from the machine has been developed.

Mounted to the face plate holding the extrusion dies, the marker impresses characters in the column about 14" from the die. Engraved extra deep with a bevel of about 25°, the marker assures a clean, clear impression in the clay.

M. E. Cunningham Co.

Circle Service No. 111

XSA Burners Offer Wide Range

A high stability is obtained when using this sealed-in nozzle mixing burner, which gives dependable operation whether burning gas or light oil. Burner design is for application where large amounts of excess air are advantageous in securing temperature uniformity (from 400% to 900%) on oil and higher on gas). It works equally well at normal air-fuel ratio or at rich ratios up to 50% provided the additional air needed for nearly complete combustion is in the combustion chamber.

North American Mfg. Co.

Circle Service No. 112

Hogue Hydraulic Brick Tester

An instrument designed specifically to help the brick and tile manufacturer control the quality of his ware in the machine room. By testing wet green ware periodically, you can maintain close control on your operation—at the machine. Problems such as poor formation, die strain, poor augers, loss of vacuum, improper temper, etc. can be spotted. Tests fired brick as well as green brick.

Industrial Measurement & Control Co.

Circle Service No. 113

Portable Conveyor-Screening Plant

A new and improved portable conveyor-screening plant has been announced. Combined reciprocating feeder, conveyor, and vibrating screen, the entire unit can be transported from one location to another without dismantling.

Under average conditions, clean, closely-sized aggregate can be produced at the rate of 50 yards per hour or more.

Lippmann Engineering Wks., Inc.

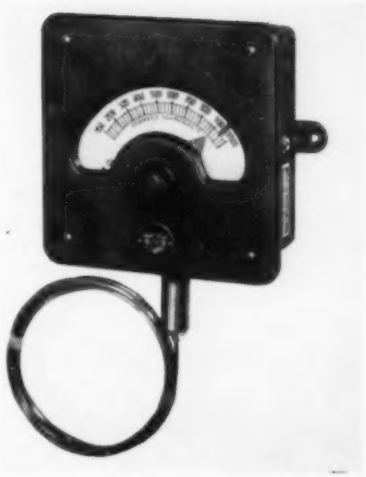
Circle Service No. 114

Portable Bricksaw

A new, lightweight, versatile, portable Briksaw, featuring Full-Vue cutting head, "goes where you go". It can be quickly and easily set up inside a boiler or kiln, can be taken up on scaffolding, operated from the back of a station wagon or pickup truck.

Eveready Briksaw Co.

Circle Service No. 115



Indicating Temperature Control

A new, compact, remote bulb, high temperature indicating temperature control is now being offered. Ideally suited for ovens, test equipment, plant processes, laboratories and other industrial heating applications, it combines accuracy and sensitivity over a range from 100° to 1000°F.

Easy reference between the setting and controlling temperatures is provided by a singe scale with two pointers. The unit may be readily set to control and indicate anywhere within scale limits and calibration is easily checked.

United Electric Controls Co.

Circle Service No. 116

Safety Grating

Safe footing on grease and ice coated gangways is no longer a problem. A new assembly of Protectoway Safety Grating platform sections is now available to "do-it-yourself" industrial erectors. These safety platforms are ideal for walking up and down steep inclines and for places where grease or viscous substances cause slippery conditions. Also excellent for use in areas exposed to inclement weather where snow, ice coatings, weight and wind resistance present a safety engineering problem.

Bustin Steel Products, Inc.

Circle Service No. 117

New Furnace Refractory

A new lightweight castable insulation developed to fill the need for an extremely lightweight and good strength backup insulation for all types of industrial furnace use has been announced.

The castable weighs only 31 lbs. per cubic foot and is reported to show no linear change or shrinkage from a cast to a dry state. Specific features listed for the new product are high coverage capacity, excellent workability and lower thermal conductivity.

J. H. France Refractories

Circle Service No. 118

Concrete Core Drill

Features which the manufacturer states guarantee faster drilling, better performance on the job, and longer drill and diamond bit life are incorporated in a new core drill now being introduced.

The drill is designed to drill through masonry, stone, refractories, concrete, and similar materials. The drill gets the job done without the noise, dust, and damage to surrounding areas so frequently encountered when hammering methods are used.

Clipper Manufacturing Co.

Circle Service No. 119

Combination Platform-Pole Trailer

To eliminate idle and seldom-used equipment, a multipurpose extensible trailer which combines into one unit the features and functions of two trailers has been developed. This overcomes the capital outlay, registration, insurance and maintenance costs usually expended on infrequently used equipment.

The new combination platform-pole trailer is basically a platform trailer for the hauling of flat loads, and is available at little more than the price of one flat-bed. The trailer is easily adjustable to a full length pole trailer of 55', with intermediate pole settings.

Atlas Trailer Manufacturing Co.

Circle Service No. 120

Safety Shut-Off Valve

When connected with one or more safety circuit breaking instruments and installed in gas or oil supply lines leading to the burners of industrial boilers, furnaces, ovens, or kilns and other processing equipment, the new safety shut-off valve shuts off flow of fuel automatically and instantly upon any break in the electric power or safety circuit. Manual-reset necessary to actuate fuel flow.

Maxon Premix Burner Co.

Circle Service No. 121

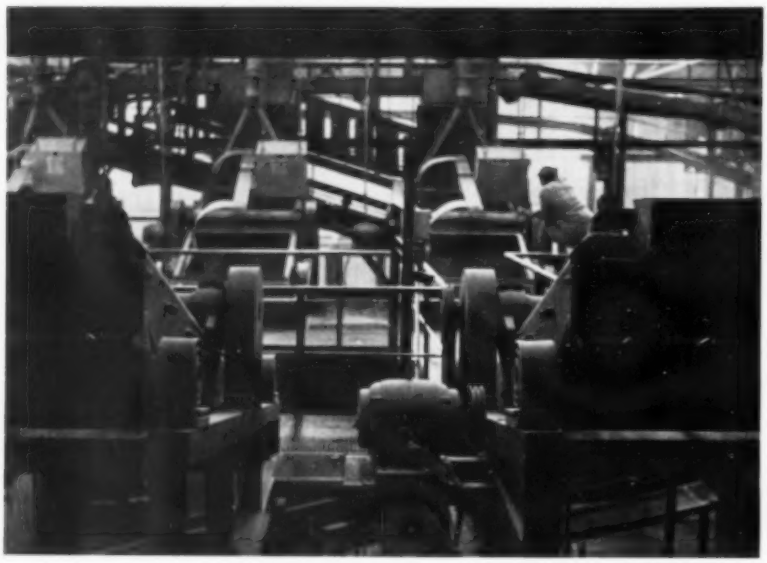
Recording pH Meter

A combined pH meter and strip chart recorder is now available at a price lower than most conventional pH meters alone.

The instrument utilizes an electrically modulated amplifier that compensates for line voltage fluctuations and uses standard radio tubes. A strip chart recorder forms the front panel of the instrument and contains a 63 ft. roll of chart paper that will last for 31 days at 1 inch per hour. Other chart speeds are available.

Analytical Measurements, Inc.

Circle Service No. 122



how to get more OUT of your grinding room...

Plan on plenty of screening area. Specify *Overstrom Electrically-Heated Vibrating Screens!* In any grinding operation, hammermills and dry pans can take more *new* feed if they don't have to handle excess fines returned by inefficient screening.

The *Overstroms* in this modern clay products plant keep circulating loads down to a minimum, grinding capacity up to a maximum. How? They operate on a flatter slope with more "shake" to open up the oversize bed and let the fines fall through.

Want more *out* of your grinding operations, too? Write for recommendations. (No obligation, of course.)

OVERSTROM VIBRATING SCREENS

OVERSTROM & SONS, INC • 2213 West Mission Rd • Alhambra, California

Circle Service No. 25

HYSTER

Trunnion steering –
best for brick handling –
Only
HYSTER® has it!

Only Hyster trucks have trunnion steering—work in closer quarters than any other 2,000 through 5,000 lb. pneumatics.

Rounded rear end, short turning radius, power steering (optional) — for maximum maneuverability in kilns, yards, box cars.

Easiest trucks to service and maintain.

Call your Hyster dealer, or write for literature.

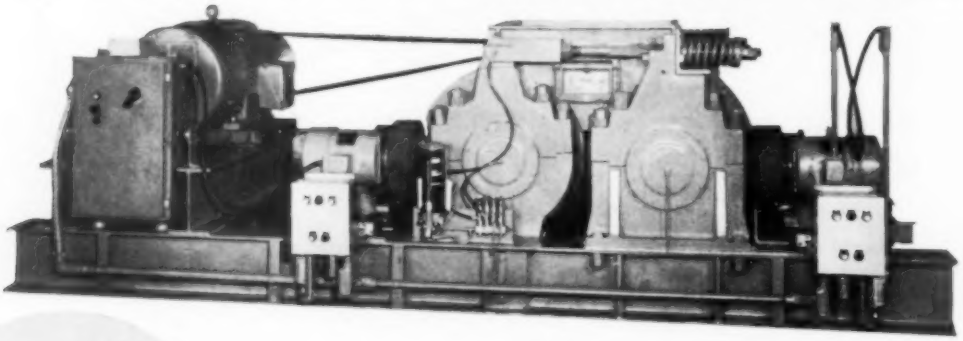
INDUSTRIAL TRUCK DIVISION—Lift trucks, mobile cranes, straddle carriers
TRACTOR EQUIPMENT DIVISION—Construction and logging equipment
MARTIN TRAILER DIVISION—Heavy machinery hauling trailers
INTERNATIONAL DIVISION—Overseas manufacturing, sales and service
Factories: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill. • Nijmegen, The Netherlands • Glasgow, Scotland • Sao Paulo, Brazil • Sydney, Australia (Licensee)

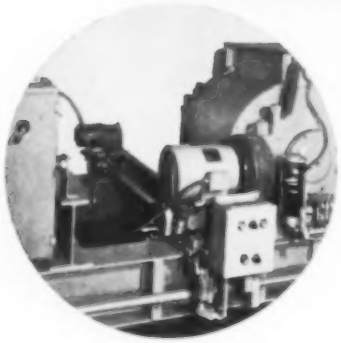
HYSTER COMPANY
INDUSTRIAL TRUCK DIVISION
P.O. Box 847 • Danville, Illinois

Circle Service No. 26

New & thoroughly proved by CHAMBERS

Heavy Duty DOUBLE SMOOTH ROLL CRUSHER





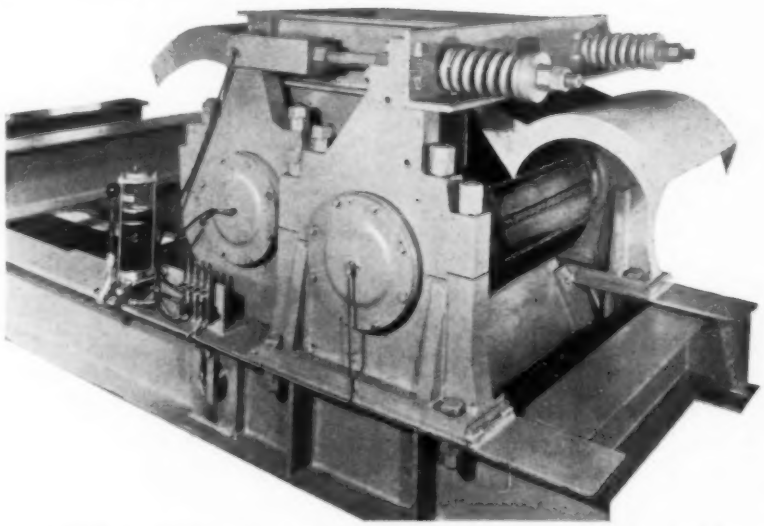
—First in the Industry to offer Precision Grinding from Truly Parallel Roll Faces

This Chambers problem-solver delivers effective high grinding pressures —relief roll pivots to concentrate pressure where needed. Fully automatic 5-HP roll grinders, built to machine tool specifications (see inset), assure accurate rolls and eliminate overtime maintenance. Other features include centralized lubrication, full cartridge bearing housings in 2-piece steel stands, self-aligning roller bearings, 6⅝" diameter shafts, removable manganese steel shells. Manufactured in 24", 16", and 12" wide models.

& *Heavy Duty* DISINTEGRATOR

The shredding and disintegrating part of any clay job is ably done by this machine. The slow roll has a heavy duty ground manganese steel shell. The fast roll is a solid steel casting with 12 welded-on shredder bars designed for coarse or fine shredding. 24", 16", or 12"-wide models. The roll resurfacing grinders above may be applied to the slow roll.

For further details about these able, long-lasting Chambers machines, write today.



SERVING YOUR INDUSTRY FOR OVER 100 YEARS

CHAMBERS BROTHERS CO. 1857 1960

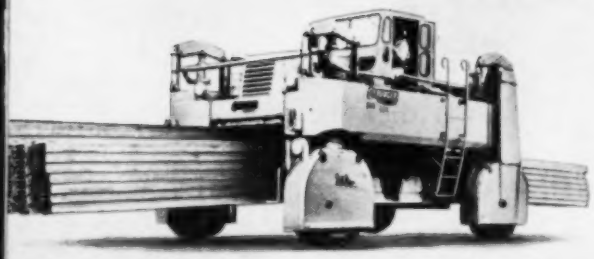
52nd & Media Streets · PHILADELPHIA 31, PA.

Circle Service No. 27

Circle Service No. 28

TOWMOTOR-GERLINGER

offers you three complete capital-saving services!



1 YOU LEASE *without down payment!*

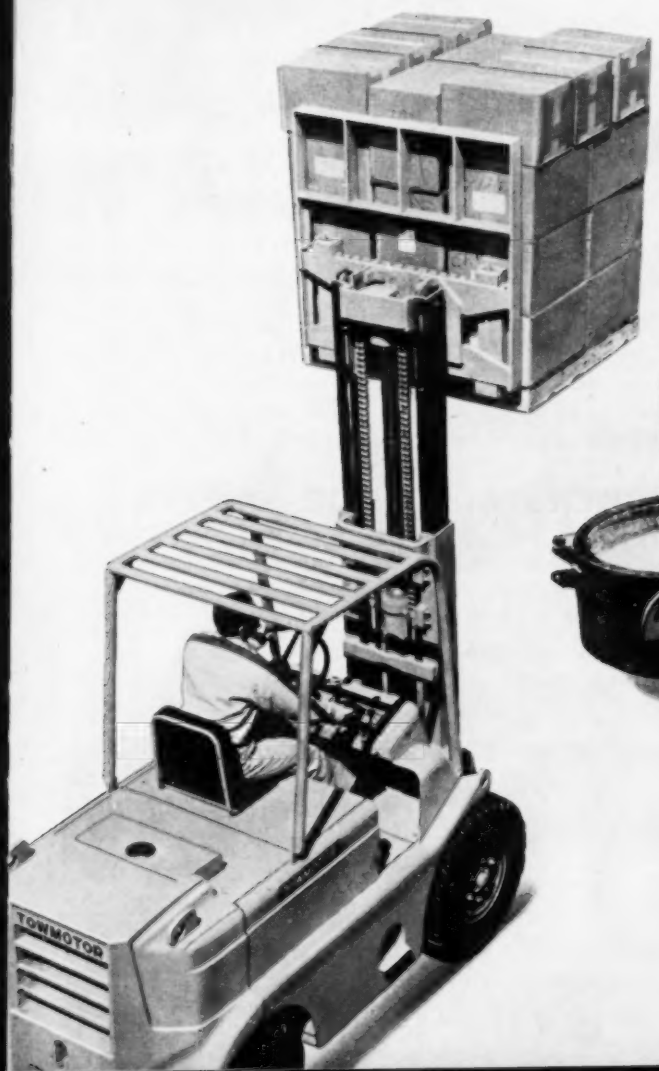
You don't make a *down payment* when you use the Towmotor-Gerlinger Lease-A-Truck Plan. You put T-G equipment to work on a continuous, year-'round basis. You just make a small monthly payment—paid out of savings the equipment produces.

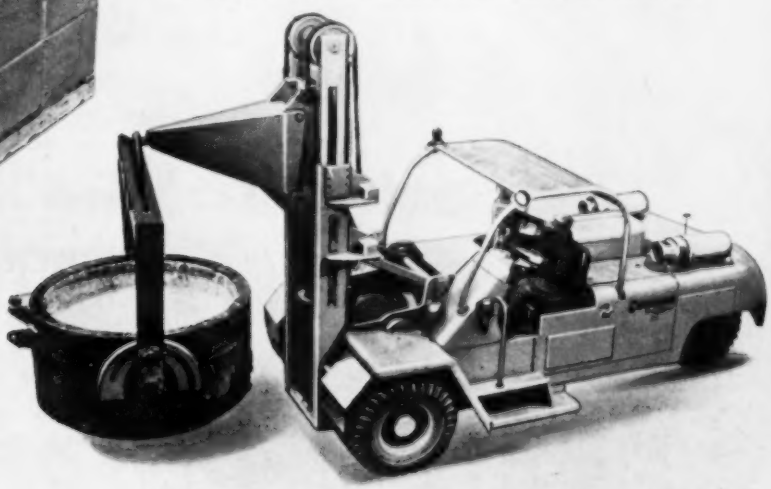
2 YOU RENT *without cash outlay!*

You don't tie up working capital when you *rent* Towmotor-Gerlinger fork lift trucks and material carriers. You put them to work immediately. You start cutting handling costs immediately. Your only cash outlay is one small monthly charge.

3 YOU BUY *and save as you pay!*

You don't pay cash for Towmotor-Gerlinger equipment when you use our low-cost Time Payment Plan. You make reasonable monthly payments. Low interest rates make it easy. Handling economies consistently pay the monthly cost many times over.





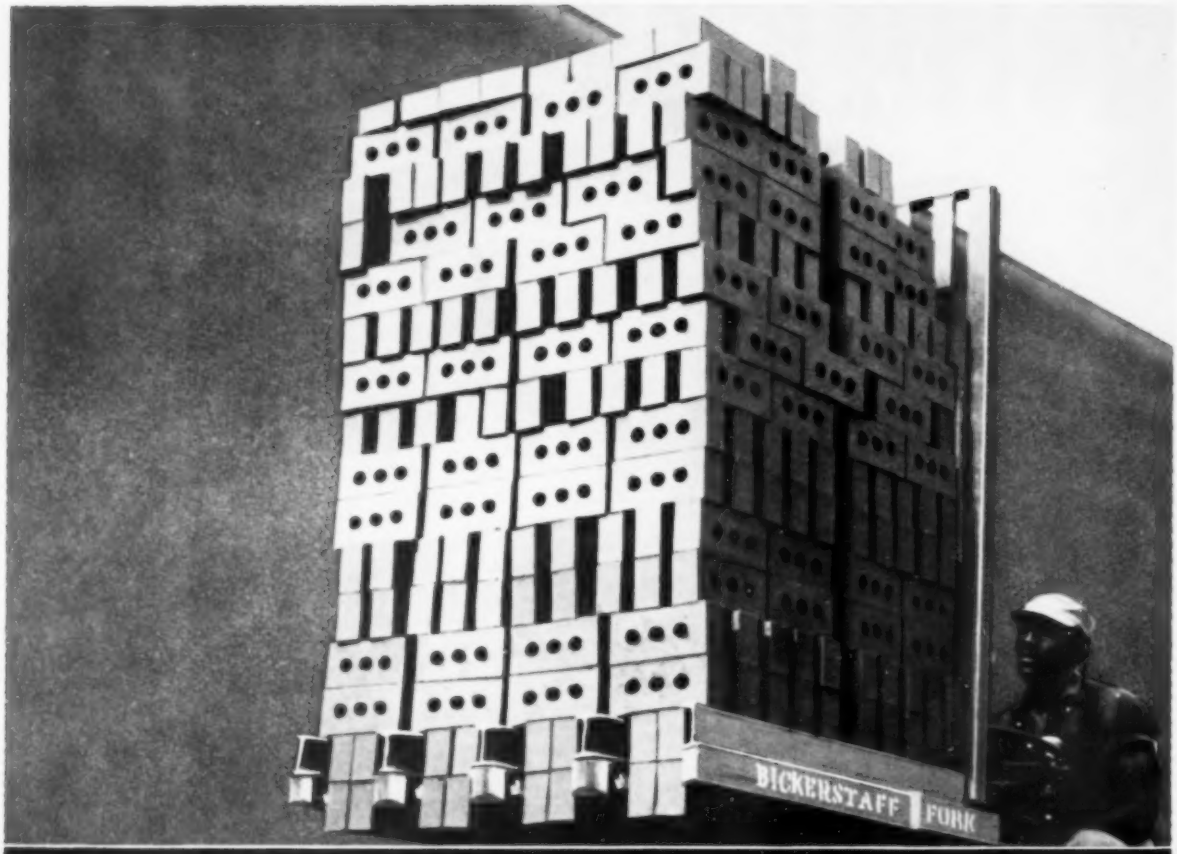
Complete factory-supervised maintenance can be included in *any* of the above plans! For complete information, write Towmotor-Gerlinger Rental Division, Towmotor Corporation, Cleveland 10, Ohio.

TOWMOTOR® -GERLINGER

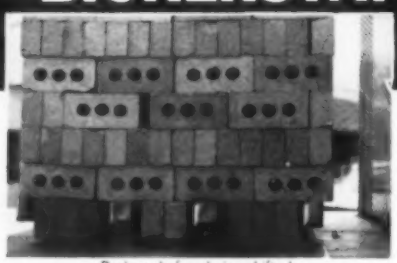
THE ONE-MAN-GANG

FORK LIFT TRUCKS, CARRIERS AND TRACTORS SINCE 1919

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation

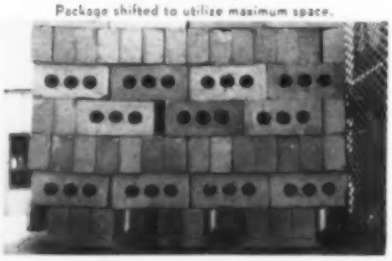


BICKERSTAFF can make your brick handling more profitable



Package before being shifted

Package shifted to utilize maximum space.



A Bickerstaff Fork makes brick handling almost a routine operation. It handles brick with the greatest of ease, reduces breakage, increases kiln turnover and loads brick direct from inventory to freight car or truck. In fact, one Bickerstaff Fork will do the work of six men equipped with brick barrows.

BICKERSTAFF ⟨SIDE SHIFTER⟩

The perfect way to utilize maximum space. The Side Shifter actually adds 8 inches to load positioning. Shifts the package right, 4 inches - left, 4 inches. Permits correct load positioning - one package over the other or "jam-up" side by side.

Get Complete Information
Write or Call Today . .

BICKERSTAFF, inc.

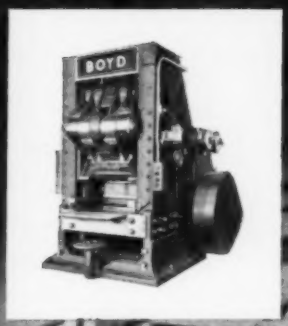
POST OFFICE BOX 1178
COLUMBUS, GEORGIA
CYpress 8-0455

Representatives throughout the U. S. and Canada
West Coast Representative
WALTER C. STOLL & SONS
5028 Alhambra Ave., Los Angeles, California

fork lift truck attachments

Circle Service No. 35

BOYD PRESS IS BASIC / for glass furnace refractories



This furnace, the world's largest for melting glass for containers, is located in the Atlanta, Georgia plant of Owens-Illinois Glass Company.

MODEL Y

delivers density for Zircon and High Aluminas

Two features of the big, heavy duty Boyd Press keep it in brisk demand for pressing glass furnace refractories:

POWER: Model Y is built to deliver the density *you* need for zircon, high alumina and heavy duty silica mixes . . . to meet *customer* demands for tough, dense, low porosity, corrosion resistant contact brick.

PRODUCTION: The big 37″ x 21″ x 12″ mold cavity lets you make the *most* of higher pressures—to increase brick production, handle larger molds or *power* press dense, intricate shapes.

Why not investigate how a *step up* to Model Y can help you produce glass brick with built-in *sales appeal* . . . density that promises long life and size control to assure low expansion and ease of installation? Write for details.

Circle Service No. 30

CHISHOLM, BOYD & WHITE COMPANY

SUBSIDIARY OF WEHR STEEL COMPANY

610 W. 57th STREET CHICAGO 21, ILLINOIS

BOYD
POWER
PRESS

MATERIAL EQUIPMENT SERVICE

For You

A quick look at many advertisements in capsule form.

If you desire any more information on these products simply use the easy circle service card in this issue.

Seventy years of built-in integrity of performance that assures less down time and reduces maintenance expense . . . that adds up to lowest cost per ton of finished product is the claim of the *Bonnot Co.*

Circle Service No. 130

A new and improved structural material lead glazed, claybonded, light aggregate (vermiculite) offers many advantages. Its high strength is one major asset. It provides a new structural clay product for both interior and exterior use with integral color styling and a smooth, self-cleaning surface. *Lead Industries Association.*

Circle Service No. 131

A complete line of Zirconium Opacifiers is offered by Tam, div. of *National Lead Co.* Boasts uniformity from lot to lot, thus producing consistent results.

Circle Service No. 132

For low shrinkage in the manufacture of your ceramic products AZO *ZZZ-88* is available. This zinc oxide is already calcined at high temperature in a carefully controlled atmosphere. Large particle sizes, low bulk (75 pounds per cu ft.) Has thin glaze consistency. *American Zinc Sales Company.*

Circle Service No. 133

Swindell-Dressler maintains an extensive program of research and development for the improved production of ceramic products. Work is being conducted currently on the fast firing of heavy clay products, lightweight clay units, and low-cost clay calcining.

Circle Service No. 134

Pressers effectively employed for tar-bonded dolmite . . . just as they have been employed in the development and eventual production of almost every new type of compacted refractory product in the past 50 years, *Chisholm, Boyd and White.*

Circle Service No. 135

Exact proportioning colors customers desire helps sell bricks. The need for exact proportioning of materials explains why so many of these electric vibrating feeders are employed in so many industries. Waytrols by *Jeffrey* are automatically weighing and delivering exact quantities for mixes going into every kind of product.

Circle Service No. 136

Superlite unloaders have proven fact-effortless-economical in operating efficiency. Save time and labor, reduce your truck fleet, lowest initial cost, speedy deliveries and low breakage. *Builders Equipment Co.*

Circle Service No. 137

Payloader by the *Frank G. Hough Co.*, is faster and operates easier, can unload, load trucks and cars, feeds mullers, crushers. Also is said to charge hoppers, bins, conveyors, and build stock piles.

Circle Service No. 138

The Tote System cuts material handling costs, improves quality control, and has more economical methods of bulk handling. There is substantially reduced labor requirements for handling and an elimination of recurring unit container costs. *Tote System, Inc.*

Circle Service No. 139

Manufacturers of air handling equipment for the ceramic industry *Robinson Ventilating Co.* offers custom engineers fans, blowers and exhausters to meet the specific requirements of your tunnel kiln, periodic kiln or product dryer.

Circle Service No. 140

Pearne And Lacy die-lockers are self contained units specially designed for high speed locking and un-locking. Available for either hydraulic or air operation. Easily replaced with die changes.

Circle Service No. 141

Wide known experience in techniques, processes and quality control for glaze, engobe, body stain, and other brick coatings with the use of inorganic colors which hold their uniformity, light and heat stability. *Ferro Corporation.*

Circle Service No. 142

#2-11 auger machine in-line or right angle installation. Has compact one piece gear frame vacuum case. Is rigid, short, has high tensile strength shafting and antifriction bearings throughout. A product of *Chambers Bros.*

Circle Service No. 143

Dragon semi-silica brick resists thermal stresses because of exceptionally high refractoriness and the ability to retain original size. Spalling loss is minimum. Dragon semi-silica assures longer life without vitrification or shrinkage even at high temperature limits. *Denver Fire Clay Co.*

Circle Service No. 144

Stripping overburden, loading from the pit, unloading boxcars, stockpiling, feeding hoppers, mullers and batchers and etc. are some of the ways other modern clay, brick, ceramic and glass producers are taking advantage of adaptable, flexible and efficient Payloaders tractor-shovels. *The Frank G. Hough Co.*

Circle Service No. 145

An answer to more profitable production is to use a Cross-Flo Tunnel kiln. These tunnel kilns use controlled scientific cooling for high production. *Miller Equipment Company.*

Circle Service No. 146

Some of the Allied firsts include patented freeway transfer system double track waste heat drier, patented side-Damper control and patented longitudinal flue system. *Allied Div. of Ferro Corp.*

Circle Service No. 147

PACKAGES BRICK DOUBLE QUICK!

Acme Idea Man Charles Apfelstadt (right) views Idea No. 53-69 at Owensboro Brick & Tile Company, Owensboro, Kentucky.

Here is your newest development for faster, more efficient brick packaging —the field proven Link-Belt/Acme Steel brick packaging system that can package as many as 120,000 bricks per 8 hour day, with a 7 man crew.

The speed and efficiency of this system enables this producer to *double* kiln output when required. And it packages in the usual multiple 100 brick pack or whatever quantity meets your exact needs.

Investigate the finest volume brick packaging method available today. We've prepared a colorful film of this entire operation for group showing. For arrangements, write us on your letterhead.

ACME STEEL

IDEA LEADER IN STRAPPING

Circle Service No. 31

ACME STEEL COMPANY
Acme Steel Products Division
Dept. BCS-60
135th St. & Perry Ave.
Chicago 27, Ill.

Send me Idea No. 53-69 and examples of how major brick producers use Acme Steel Strapping.

*Name*_____

*Title*_____

*Firm*_____

*Address*_____

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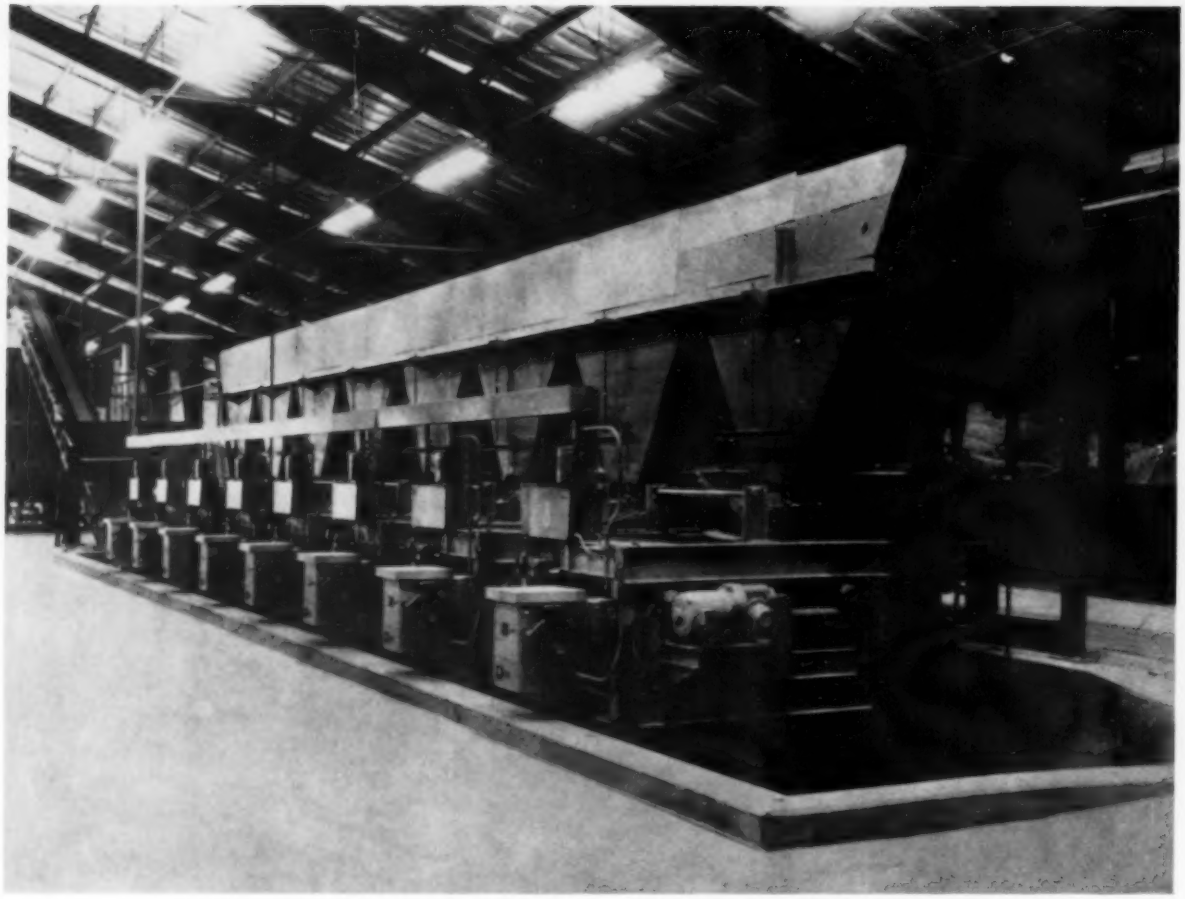

A group of eight Jeffrey electric vibrating feeders discharging to weigh hoppers at one of A. P. Green's plants.

Jeffrey Congratulates A. P. Green...

On the occasion of the tenth anniversary of the A. P. Green Fire Brick Company, The Jeffrey Manufacturing Company offers its congratulations. We are proud to have furnished a variety of equipment employed by this company.

In engineering their plants for efficiency and future growth, A. P. Green has installed Jeffrey feeders, mechanical conveyors, crushers, elevators and material-handling equipment. The Jeffrey Manufacturing Company, 916 North Fourth Street, Columbus 16, Ohio.

JEFFREY

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Circle Service No. 32

NOW... COLORED SPECKS

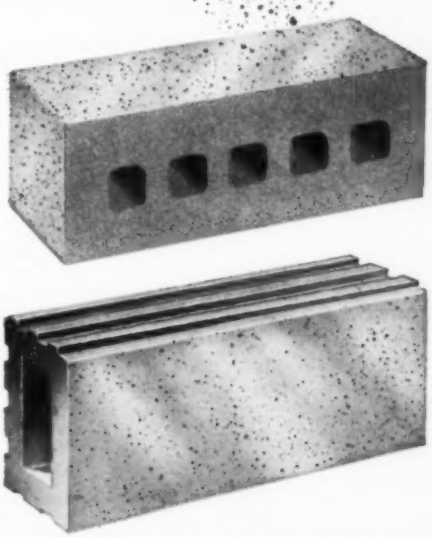
to brighten your profit outlook

Add colored specks to your glaze and your brick and structural facing tile will have that "wanted look" architects write into specifications.

Everyone likes specks. Drakenfeld has them in permanently bright colors – greens, pinks, blacks, yellows, blues, browns – in a variety of screened sizes. Single colors will turn out as peppered effects. You can use several colors to produce spattered surfaces. You can use specks of one color in a glaze stained a contrasting or complementary color. Or, it's easy to create attractive scatter patterns with a mix of colors. The possibilities are practically endless.

Architects want color and more color. Drakenfeld Colored Specks now give you another means of capitalizing on this trend. Write for samples, prices and application information.

Circle Service No. 33



CALL ON *Drakenfeld* ***YOUR PARTNER IN SOLVING COLOR PROBLEMS***

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BRAUN-KNECHT-HEIMANN COMPANY, 1400 Sixteenth Street, SAN FRANCISCO 19, California — Phone: HEmlock 1-8800

Fast-hauling Michigan Scraper has cut bank-to-stockpile clay supply cost in half.

Michigans help Cherokee Brick slash costs of clay supply

At plant, fast-moving Michigan Tractor Shovel spreads rail-delivered clay in thin layers.

Clay, thin-cut over length of drying area, is dumped into batcher 2¼ cu yds at a time.

Reverse pass automatically lowers bucket scarifier teeth, rips sun-baked clay.

Considering the many years brick and clay people have used scrapers and tractor shovels, you'd think any savings gained with these machines would today be insignificantly small.

Not so—at least at Cherokee Brick & Tile Company, Macon, Georgia, it's not so.

Scraper operation educed from 32.4¢ to 16.1¢ per yd

Down in their 1200 acre riverside pit, Cherokee has a 19 yd Model 210 Michigan Tractor *Scraper*. Its speed, ease of loading and lower repair needs have cut costs from 32.4¢ per bank yard, obtained with self-propelled pans previously used, to 16.1¢ per bank yard.

One machine replaces two on plant feeding assigment

Two miles away, a fast-moving 127 hp, four-wheel-drive Model 125A Michigan Tractor *Shovel* feeds the plant. Equipped with a 2¼ yd bucket, it does more work than the 1¼ yd and 1⅜ yd loaders it replaced. Its assignments include (1) distributing and dozing clay delivered 48 yds at a time by dump-type rail cars . . . (2) scarifying the dry clay (with retractable bucket teeth) for easier pickup . . . (3) delivering both bank-run and special stockpiled clays to preparatory equipment. From this material, Cherokee makes some 202 different kinds of bricks, tile, etc. In 1959, they shipped an average of 807 tons *per day*—the equivalent per day of 360,000 eight-inch bricks.

Speed eliminates costly winter work

Besides the dramatic cost reductions thus obtained, the Michigan Scraper's great speed and dependability enable Cherokee to remove all overburden and gather and blend each year's supply of clay in only seven or eight months of dirtmoving work. Total yardage: about 250,000 yds per year. Scrapers no longer have to operate in winter with its problems of more moisture and more "clumping" of the clays. The Michigan, on typical 2,000 ft cycles, hauls a scale-weighed average of 14.6 bank yards per load, makes 12 to 14 trips per 50-minute hour. Other self-propelled units, formerly used, averaged respectively 10.8 bank yards per load, 9 to 10 loads per hour . . . and 8.2 bank yards per load, 12 to 14 loads per hour. Their output: about half that of the Michigan.

"Easy operating boosts output"

"Another big Michigan advantage," says A. Harry Vaughan, Cherokee vp and general manager, "is ease of operation. Power steer and power shift really help boost production—especially at the end of the day."

Prove it for yourself. We'll be glad to demonstrate a Michigan Tractor Scraper—or Tractor Shovel—or Tractor Dozer on your job. Any time!

Michigan is a registered trademark of

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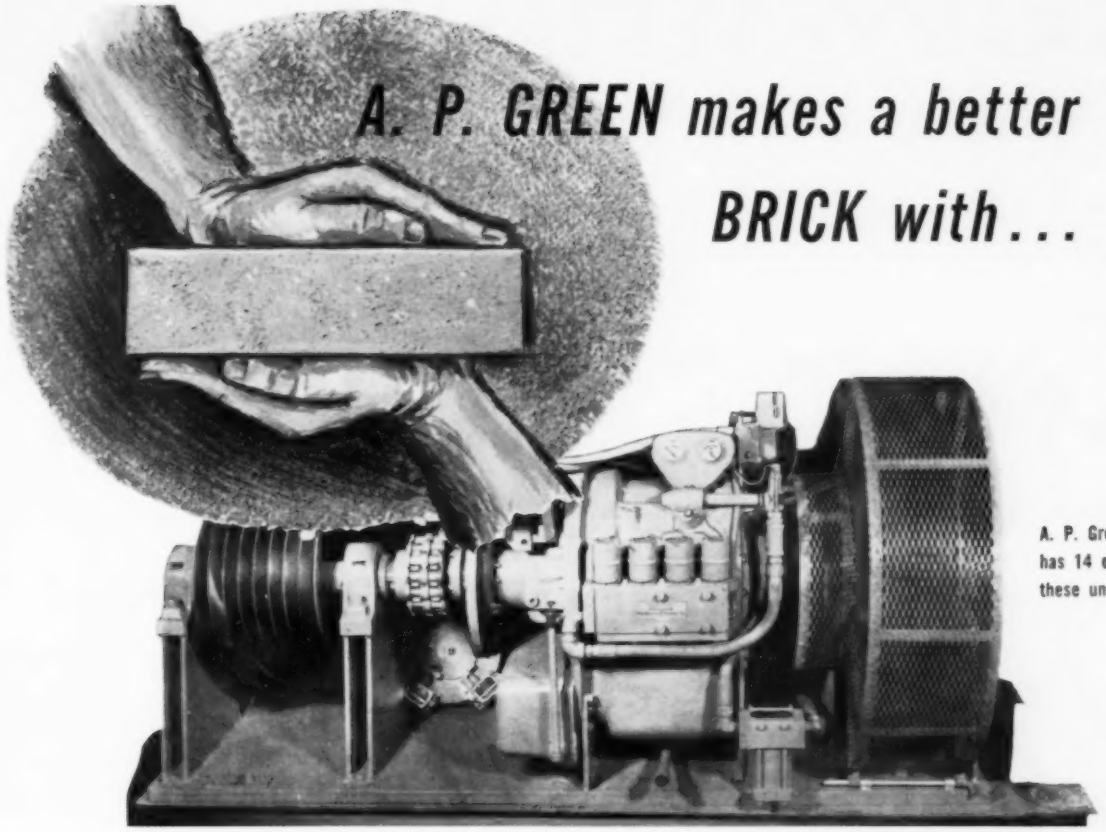

A. P. Green has 14 of these units

THE MULTI-SPEED DRY PRESS DRIVE

slows presses during the pressing cycle, triples speed on the charging cycle . . . shifts to an intermediate gear for ejection. Result: greater density, fewer air voids, reduced roll and segregation, a better brick, fewer rejects.

Available in double V-belt or direct coupled drive, with or without torque converter.

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ORTRUC, INC., 320 So. Grand Ave., St. Louis 3, Mo.

Please send me additional information about the MULTI-SPEED Dry Press Drive.

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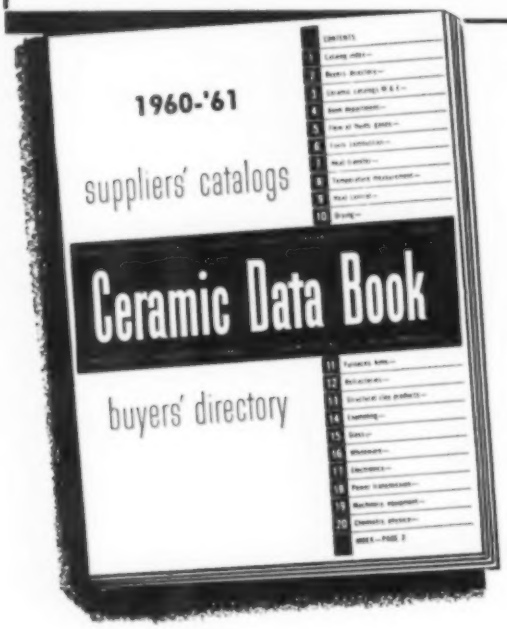

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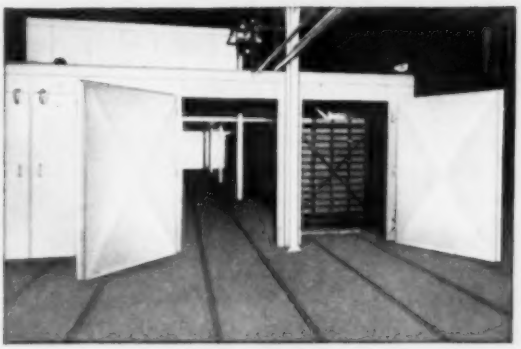
Ceramic Data Book

5 South Wabash Avenue **Chicago 3, Illinois**

HEAVY CLAY DRYERS

...the product and problem dictate the design

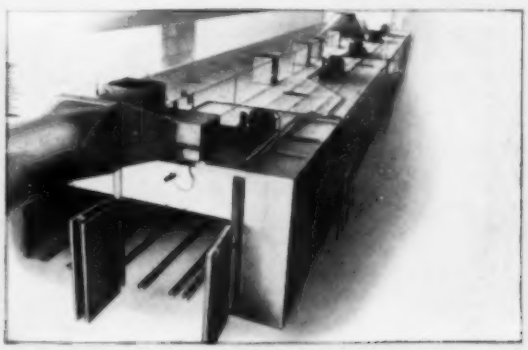


Car Type Humidity Controlled Fire Brick Dryer.

The LANLY Company's geographical location is near the heart of the country's clay products producing area. This has contributed to their 20 year acquisition of the essential knowledge and experience required to design and build the finest in heat processing equipment for the exacting varied applications in the industry.

Unprecedented competition, coupled with ever increasing costs has made it mandatory for clay products manufacturers to strengthen their relative positions in the field through the replacement of outmoded dryers. This has been accomplished in a large measure by their coordinated action with the LANLY organization.

Rack Type Humidity Controlled Refractory Dryer.



Progressive Type Humidity Controlled Quarry Tile Dryer.

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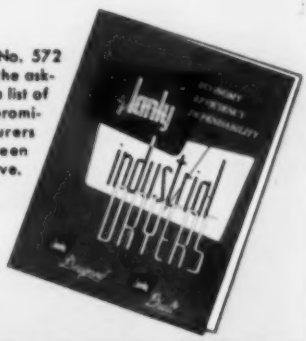
LANLY Bulletin No. 572 is available for the asking. It contains a list of some of the prominent manufacturers LANLY has been privileged to serve.



Atlanta, Georgia • Birmingham, Ala. • Boston, Mass. • Chicago, Ill. • Cleveland, Ohio
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This one does a man-sized job — has real muscle and speed to give you the power, capacity and output you require to make a profit from your pit operation. UNIT shovels and draglines are dependable producers, whether digging, loading, stockpiling, or dredging. Low original, operating and maintenance costs, *plus* reliable production, mean you *earn more* with a UNIT from each ton of material moved. ■ Here are some important reasons why UNIT is your most profitable choice for an efficient, cost saving excavator. ■ The exclusive, one-piece cast gear case (there's nothing else like it) keeps machinery in perfect alignment and seals out all dirt and moisture for virtually maintenance-free operation. ■ Straight-in-line mounting of the engine and main machinery contributes to the low operating cost by eliminating many wearing parts, reducing friction loss, and harnessing every bit of horsepower. A worm drive transmits the power smoothly — features an efficient, one-step reduction from engine speed to the main machinery. ■ Disc clutches wear evenly for longer life and their smoother operation reduces load shock on the entire power train. ■ Automatic traction brakes provide an instantaneous traction lock on steep grades . . . are quickly serviced because split brake drums allow linings to slide in or out without completely dismantling brake shoes or drums. ■ Your factory-trained UNIT dealer has full information on the complete line of UNIT ½-yd., ⅝-yd. and ¾-yd. excavators. Call him *now* for detailed specifications and price information.

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SHOVELS ½ to ¾ YDS.

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Use this valuable service to obtain complete information about the many products available to you. Send us one card now and save the second card for later use.

Brick & Clay Record

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2	14	26	38	50	62	74	86	98	110	122	134	146	158	170	182
3	15	27	39	51	63	75	87	99	111	123	135	147	159	171	183
4	16	28	40	52	64	76	88	100	112	124	136	148	160	172	184
5	17	29	41	53	65	77	89	101	113	125	137	149	161	173	185
6	18	30	42	54	66	78	90	102	114	126	138	150	162	174	
7	19	31	43	55	67	79	91	103	115	127	139	151	163	175	
8	20	32	44	56	68	80	92	104	116	128	140	152	164	176	
9	21	33	45	57	69	81	93	105	117	129	141	153	165	177	
10	22	34	46	58	70	82	94	106	118	130	142	154	166	178	
11	23	35	47	59	71	83	95	107	119	131	143	155	167	179	
12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	

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3	15	27	39	51	63	75	87	99	111	123	135	147	159	171	183
4	16	28	40	52	64	76	88	100	112	124	136	148	160	172	184
5	17	29	41	53	65	77	89	101	113	125	137	149	161	173	185
6	18	30	42	54	66	78	90	102	114	126	138	150	162	174	
7	19	31	43	55	67	79	91	103	115	127	139	151	163	175	
8	20	32	44	56	68	80	92	104	116	128	140	152	164	176	
9	21	33	45	57	69	81	93	105	117	129	141	153	165	177	
10	22	34	46	58	70	82	94	106	118	130	142	154	166	178	
11	23	35	47	59	71	83	95	107	119	131	143	155	167	179	
12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	

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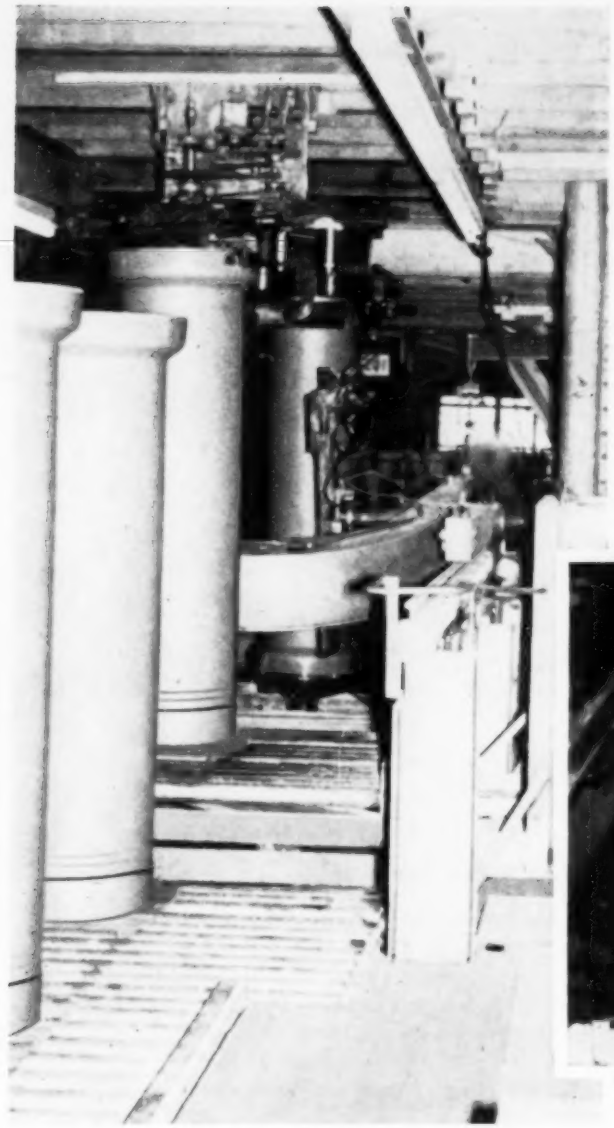
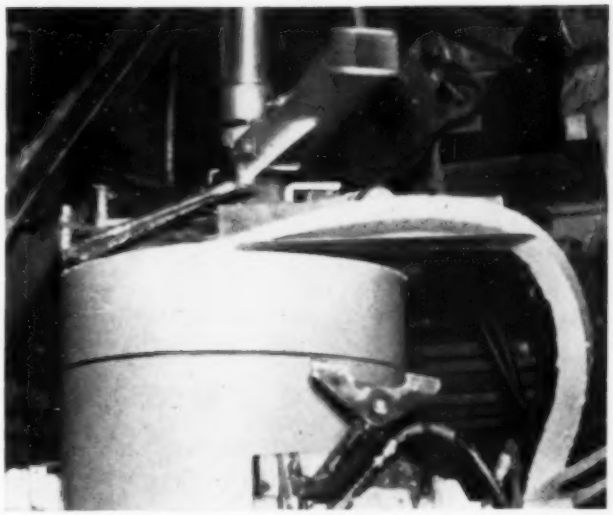
The "OCTOPUS"

Complete Automatic Production of Pipe with Drying Rings



Note low head room



Patent Applied For

1—Removes large pipe from vertical press (No socket boards required)

2—Finishes both spigot and socket ends

3—Cuts pipe to length

4—Provides drying rings

5—Automatically places pallet board

6—Turns and places pipe on drying ring and pallet board

7—Rolls finished pipe out for truck pick-up

Number of men needed for above operations ..... NONE

Write for details on the many new labor saving features in automatic handling and finishing equipment.

Engineers and Manufacturers of Automatic Handling and Finishing Equipment for the Ceramic Industry.

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Los Angeles 54, California Phone: CU 3-1268

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PEARNE AND LACY INC. MACHINE COMPANY

Circle Service No. 39

EVANS PIPE COMPANY reports:

28% metered fuel savings with B&W Insulating Firebrick

Evans Pipe Company, Uhrichsville, Ohio, metered fuel consumption to compare the performance of a B&W K-20 Insulating Firebrick crowned kiln with two heavy firebrick crowned kilns. The results showed that B&W IFB provided an average fuel savings of 28.2% per ton of ware fired. These fuel savings, in two years time, will pay for the total installed cost of the B&W IFB crown. Thereafter additional fuel savings are clear profit.

To insure accurate comparison, all three Evans Pipe kilns had the same 36' inside diameter. The kiln charge was similar for all burns. Sidewalls of all three kilns had essentially the same heavy firebrick construction. The two heavy firebrick crowned kilns, used for comparison purposes, are the most efficient of this type in the plant.

B&W IFB are the *lightest weight insulating firebrick made*. Thus they store and conduct minimum heat. Low heat storage, due to light weight, permits faster heating and cooling of the kiln, with less usable heat lost up the stack. This results in shorter cycle time with increased production.

For facts and figures on *lightweight* B&W Insulating Firebrick, consult your local B&W Refractories Representative, or write for Bulletin R-43 to The Babcock & Wilcox Company, 161 East 42nd Street, New York 17, N. Y.

R-937

B&W THE BABCOCK & WILCOX COMPANY

REFRACTORIES DIVISION

B&W Firebrick, Insulating Firebrick, and Refractory Castables, Plastics, Ramming Mixes, Mortars, and Ceramic Fiber.

Circle Service No. 40

EDITORIAL

Where Does Our Responsibility Stop?

We received a letter the other day from a very well-known clay products manufacturer which we wish, in part, to share with our readers. It has to do with honor and integrity.

"It seems to me I have noted a growing laxity in the construction industry from the architect right on down to the supplier and sub-contractor in the careful fulfillment of their responsibilities.

"It might be summed up that there seems to be lacking in some cases a strong desire to do the best possible job in fulfilling the obligations and trust reposed in us within the construction industry. We find architects thinking in terms of fads and lacking in follow-up on specific jobs. Contractors are often approaching jobs by getting by within the limitations of a specification as they interpret it, and failing to give the close personal attention on supervision, work protection, and installation that some of our old time contractors assumed as their moral obligation on projects. Suppliers are causing additional expenses by lack of attention to the proper handling and supplying of the constituent parts of buildings.

"We need more "pride in our profession." In this construction industry we need to have people who are dedicated to the idea that they have a moral responsibility to see that the public gets good, sound, well-designed, and well-constructed structures.

"What I have said about the above people is doubly true of the clay products industry. We have too many people that take the order and then do not follow through carefully to see that the architect, contractor, and owner are pleased with the products and the deliveries. Throughout the United States, I have found architects who have strong feelings of resentment against our industry because of the lack of proper performance by some of our producers.

"If there are complaints, the head of the company, or the sales manager should immediately investigate it and give it their personal attention and see that corrections and adjustments are promptly made. The follow-up should be done immediately with the people at the plant to show them the importance of the proper performance of our responsibilities.

"The integrity of the construction industry rests on the personal integrity of the people in charge in all phases of the industry. Perhaps we all need to take a good cold hard look at our own personal integrity with relation to our responsibilities."

J. J. Swec

Executive Editor

NEWS OF THE INDUSTRY

1962 SCPI Convention Scheduled

J. J. Cermak, Secretary of the Structural Clay Products Institute has announced that the 1962 convention of the industry will be held in Phoenix, Arizona. The Executive Committee of SCPI, meeting in Washington, D. C. on May 12, approved the selection of the site.

Headquarters for the convention will be at the Arizona Biltmore Hotel. The dates will be November 10-14.

Masonry Guild Promotes Brick

The Arizona Masonry Guild has launched a major advertising campaign to stimulate greater public interest in masonry construction, with ads appearing in daily newspapers in Phoenix and Tucson and with commercials regularly on radio station KOY. The campaign also utilizes television station KPHO with sponsorship of a newscast each Monday night.

Atlas Tile & Brick Co. Starts Operation

The new $700,000 brick plant of the Atlas Tile & Brick Co., Shuqualak, Miss. went into production in May.

President L. C. Guillot made the announcement that the first brick has come off the line and the plant will be ready for capacity production in the immediate future.

Plant Superintendent Frank Collins said that 45 people would be initially employed inside the plant alone, with others employed in the clay mining process.

The plant will produce a premium face brick with variations in color from off-white to gray. It will produce 60,000 brick per day and company officials said that planned expansion would soon double this output.

Athens Brick Co. Plans Expansion

Stockholders of the Athens (Texas) Brick Co. have authorized an expansion of the company's facilities costing as much as $100,000 to improve production and quality.

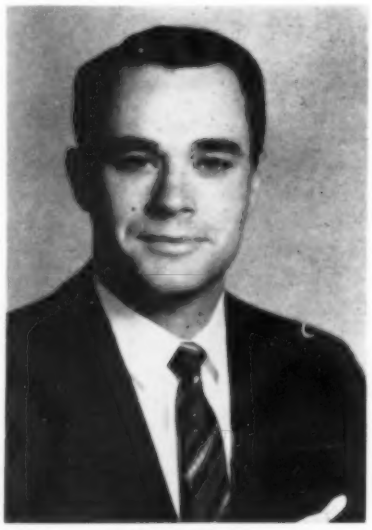
H. B. Sampson, president, reported a record year in sales and profits for 1959 and said it appears that an even better year may be expceted in 1960.

The stockholders elected Sampson as president; F. L. Coats, treasurer, Mrs. Lanelle Boldt, secretary; F. L. Robbins, chairman of the board, and Wayne Smallwood, office manager.

Coleman Named Field Engineer

John C. Coleman has joined the W. S. Dickey Clay Mfg. Co. as field engineer.

Coleman, formerly a research assistant at the University of Oklahoma Research Institute, will provide technical assistance to consulting engineers, contractors, and municipal officials in Texas and New Mexico. He will make his headquarters at the Firm's San Antonio, Texas sales office.



John C. Coleman

New Brick Plant Slated For Mississippi

The Delta Brick & Tile Co., Indianola, Miss. will establish a $625,000 brick plant a half-mile west of Macon, Miss. according to an announcement made by Frank Rinehart, president of the company.

The plant will be located on a 52-acre tract and will have about 77,000 square feet of floor space, 80,000 square feet of paved area and spaces for grinding, screening, blending and processing the clay.

The dryer and kiln will have a daily production rating of 60,000 brick. Rinehart expressed hope that grading for the plant will begin in early June. Completion of the plant is scheduled for April 1, 1961.

Donnelly-Brick Co. Celebrates 75 Years

The Donnelly Brick Co., Kensington, Conn., is celebrating its 75th anniversary this year.

The firm was organized in 1885 by Michael Henry Donnelly, Irish immigrant. The founder's son, Stephen P. Donnelly, is now president of the company.

President Donnelly, long an official of the company, was elected to his executive post in 1948. Henry H. Rose, vice-president and general manager has been with the firm for 41 years. Stephen Donnelly, Jr. is a company director.

By way of celebrating its diamond jubilee, the firm is completing installation of new machinery. The company manufactures sand molded brick which it maintains is the most popular type in the country today.

A high spot of engineering advancement was made in 1919 when Donnelly installed the first tunnel kiln for the burning of brick.

Sugarcreek, O. Hosts Swiss Dignitary

Sugarcreek, O. threw out the welcome mat recently for a prominent Swiss visitor, Dr. Eugene Dietschi, a member of the upper house of the Swiss Parliament. One of the highlights of the tour was the visit to Belden Brick Co. plants.

News of the Industry . . .

Howard Lund

New Chief Engineer For Pomona Terra-Cotta

Howard Lund has been appointed chief engineer of Pomona Terra-Cotta Co., Greensboro, N. C., according to W. C. Boren III, president. Lund received his B. S. in Ceramic Engineering from the Univ. of Ill. in 1949.

Lund came to Pomona from Armour Research Foundation of the Ill. Institute of Technology. His job with the foundation was as project engineer on work sponsored by the National Clay Pipe Research Institute.

Fire Destroys Glen-Gery Plant

Fire of undetermined origin fanned by a steady wind, swept through the Glen-Gery Brick Co.'s. Ephrata, Pa. plant May 15. Fire and plant officials estimate the loss would be counted in thousands of dollars.

Glen-Gery Brick Co. president, Woodrow Eshenaur, said there were nearly three million brick in the plant at the time of the blaze. Most of them were ready for shipping and will be salvaged.

Involved in the fire were several of the nine kilns, drying rooms, a two-story processing building, and a conveyor bridge spanning the Reading Railroad tracks. Grinding and crushing buildings across the tracks were not damaged.

Although much of the plant was demolished, Eshenaur, stated that the company will start rebuilding immediately.

New Lightweight Aggregate Plant For Colorado

Great Western Aggregates has just awarded a contract to build a new lightweight aggregate plant at Rocky Flats, Colorado.

The plant will have an annual capacity of 300,000 cubic yards of lightweight aggregate which will be sold under the trade name of "Idealite". The aggregate is a coated type expanded shale.

This will be the firm's second plant. The first was put into operation in Laramie, Wyoming in 1958. Because many new structures are scheduled to be built with Idealite, the Larimie plant is about to be outstripped by demand.

Modern Brick Plant Authorized

A new brick plant has been authorized for construction in Yazoo City, Miss.

The corporation behind the proposed plant is the Mississippi Clay Products Co., Inc. Frederic F. Mellen, discoverer of the Tinsley oil field, is president of the new company. S. F. Thigpen, Jr. is chairman of the board.

Production Resumes At Fenati Brick Co.

The main brick-making plant of the Fenati Brick Co., gutted by fire last Feb. 5 resumed partial production in May.

H. M. (Ben) Fenati, president of the company, said present operations will produce 50 to 60 percent of the plant's normal production.

The $250,000 fire at the plant was believed to have started from a spark off a welder's torch. At the time, workmen were installing new heating equipment near a diesel engine.

New Rotary Dryer Installed At Stiles

A huge rotary dryer in operation at the plant of the Stiles Corp., Hamden, Conn. is making possible the manufacture of brick of a higher uniform quality than previously possible, according to Leo Scillia, plant engineer.

Seventy feet long, the dryer weighs 78 tons and has an inside diameter of eight and one-half feet. The new equipment automatically controls the moisture content of the clay. Wet clay, delivered by truck from Stiles' nearby pits is placed in hoppers and then fed into the dryer, which is rotated by a 60 HP motor.

Alcoa To Truck "Hot" Aluminum 100 Miles

Aluminum Co. of America is understood to have contracted to deliver molten aluminum to a General Motors Corp. plant.

Under the "hot metal" pact, the aluminum would be transported in refractory-lined insulated trucks from Alcoa's Evansville, Ind. plant over open highway for about 100 miles to a G. M. plant at Bedford, Ind.

Kenya Clay Company Seeks U. S. Capital

U. S. private capital investment amounting to $420,000 to expand and modernize its clay products plant is sought by the Kenya firm, Coast Brick & Tile Works, Ltd.

The firm, established in 1942 for the manufacture of brick, tile, pipe and other clay products, states that there is a good and expanding market for its products. The present demand, according to the firm, exceeds production.

Gladding, McBean Buys Utah Fire Clay Co.

Gladding, McBean & Co. has reached an agreement with Utah Fire Clay Co. of Salt Lake City, Utah, to acquire control of that firm through an exchange of shares in a $3 million deal.

Gladding, McBean, one of the west's largest refractory firms, also will end up with 100 per cent ownership of Murray Refractories, Murray, Utah, producer of silica refractories.

Before the transcation, Gladding, McBean owned 51 per cent of Murray and Utah Fire Clay owned 49%.

News of the Industry . . .

Harbison-Walker Awards Scholarships

Twenty-four sons and daughters of Harbison-Walker Refractories Co. employees were awarded scholarships to the college of their choice on May 4 by Harbison-Walker Foundation, Inc. Each of the scholarships is for $500 per year.

This year's awards bring to 104 the number of scholarships granted by the Foundation to employees' children since the scholarship plan was established in 1953, and when added to those already granted which extend into the 1960-61 academic year will raise to 54 the number that will be attending college next year with Harbison-Walker Foundation assistance.

This year's scholarships awards went to employees' children in Blandburg, Clearfield, Mount Union, Pittsburgh, and Templeton, Pa.; Athens, Texas; Baltimore and Leslie, Md.; Olive Hill, Ky.; Birmingham, Ala.; and Vandalia and Fulton, Mo.

Canadian Plant To Produce Aggregate

Cooksville-Laprairie Brick, Ltd., Montreal, Canada, is planning to cash in on growing interest in lightweight aggregate building material with a new plant near Delson, Quebec.

On Canada's West Coast, production of the expanded shale began last October by B. C., Lightweight Aggregates, Ltd. Other lightweight aggregate plants in Canada include those located in Calgary, Edmonton, St. Boniface, Man., Toronto, Regina.

R & I Announces Promotions

At a recent meeting of the Board of Directors of Refractory & Insulation Corp., New York, N. Y., manufacturers of castable and bonding refractories, insulating blankets and block, Frank T. Christenson was named Vice President of the Corporation and George A. Mies was named Assistant Vice President of the Western Division of the Corporation.

Porter Develops New Semi-Silica Brick

Refractories Division, H. K. Porter Co., Inc. has begun production of a new semi-silica refractory brick, "Sem-Sil" for continuous service at operating temperatures up to 2600° or more in metallurgical and ceramic furnaces.

"Sem-Sil", made by Porter in Canyon City, Colo., by the dry press method, contains approximately 75% silica. Principal applications are in roofs of hot metal mixers, roofs and sidewalls of heating furnaces, and side walls of open hearth regenerators.

Outstanding features are: unusual volume stability and load bearing ability at top operating temperatures, and excellent resistance to structural spalling. In the presence of alkali vapors, a protective glaze forms on the hot face of the brick which prevents penetration of furnace gases into the refractory brick and resultant damage.

Bonnot Co. Under New Control

The C. L. Gougler Machine Co. of Kent, O. has acquired substantially all of the common stock of The Bonnot Co., Canton, O., B. T. Bonnot, president, and C. W. Enyart, president of Gougler, announced.

It was announced present plans call for operating Bonnot as a subsidiary.

Bonnot and Enyart said it is believed the combined resources of the two firms, together with other Gougler interests, will insure an appreciable development of products and services of all units.

New officers of the Bonnot Co. will be Charles W. Enyart, president; W. W. Morris, vice president and treasurer, and R. A. Brackenridge, vice president and secretary. B. T. Bonnot will continue as director of the company.

Silica Corp. to Build Plant

Construction is scheduled to start this month on a 1½ million dollar plant near Elkhorn City, Ky. by the Silica Corp. of America.

The plant will process a huge deposit of Silica lying along the east crest of Pine Mountain on the Kentucky-Virginia border. Tests in laboratories of the Univ. of Ky. showed the silica to be 98/8% pure in its natural form.

Bay State Abrasives Buys West Coast Diamond Blade Firm

Bay State Abrasive Products Company, Westboro, Massachusetts, has purchased the Felker Manufacturing Company of Torrance, California, it has been announced by Arthur E. Gilman, President of the Massachusetts grinding wheel firm.

W. S. Tyler Co. Appoints Albert E. Reed V.P.-Marketing

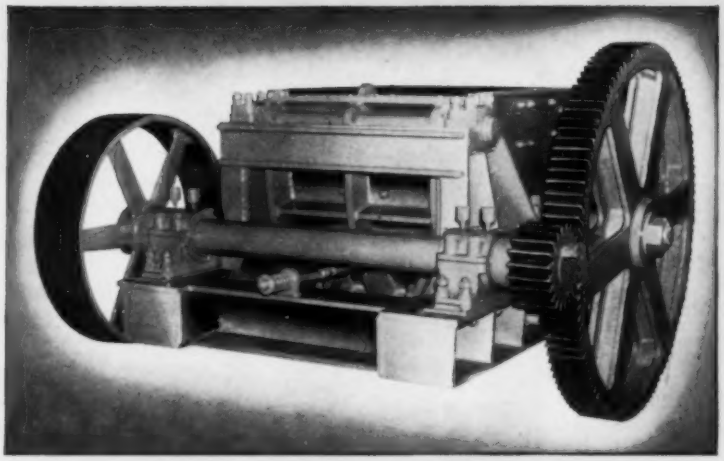
Creation of two separate divisions for marketing Woven Wire Cloth and Screening Machinery, and appointment of Albert E. Reed as Vice-President Marketing, have been announced by E. T. Jeffery, President of The W. S. Tyler Company of Cleveland.

Other appointments announced concurrently are F. Truman Thompson, Sales Manager of the new Woven Wire Cloth Division; and Walter C. Mahlig, Assistant Sales Manager of the same division.

Varco National Distribution Of Uniframe Buildings

Varner Steel Products of Pine Bluff, Ark. has announced national distribution of their Varco Uniframe Buildings. Varco buildings are a rigid frame structure designed for use in industry, business, community, and farm.

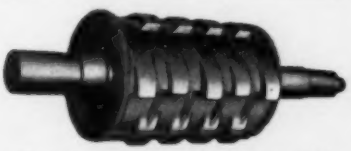
The firm, headed by R. G. Varner, has been concerned with metal building construction for over thirteen years. During much of that period, Varco activity has been concentrated in the brick and clay industry.



PENNSYLVANIA HERCULES

New job-proved single roll crusher brings you lower operating, maintenance costs

Pennsylvania has researched the factors that make single roll crushing costs mount—and come up with a new machine specifically designed, and *job-proved*, to keep costs down.



Cast alloy steel roll shell is made in one piece and keyed as well as shrunk on the rollshaft. No segments or renewable teeth to loosen or fall out. Readily accessible teeth are easily built up by welding.

Here are just a few high spots of this great new crusher:

- **Hopper jams are prevented by the larger hopper opening and spacious throat opening made possible by the contour of the breaker plate.**

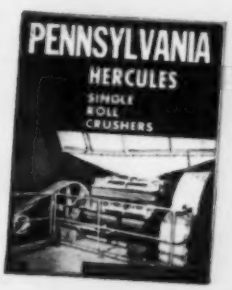
New automatic toggle release supplies positive release mechanism for breaker plate.

New design of countershaft placement, plus large diameter of the gear improve stress distribution on countershaft bearings.

Hercules bearings are away from the frame. Easy to get at, easy to maintain.

Breaker plate is heavy steel fabrication lined with cast manganese steel wearing plates; guaranteed against cracks and flaws.

If you have a job where a single roll might be used, find out more how this new Pennsylvania Hercules will save you money in more ways than one. Send for new Bulletin 2020.



PENNSYLVANIA CRUSHER DIVISION
BATH IRON WORKS CORPORATION
WEST CHESTER, PENNA.

★ ★ ★

Over 50 years concentrated experience in all types of material reduction makes Pennsylvania your best source of crushers and engineering advice and service. Call on Pennsylvania with your next crushing problem. Representatives from coast-to-coast.

PENNSYLVANIA
BATH-BUILT
CRUSHERS

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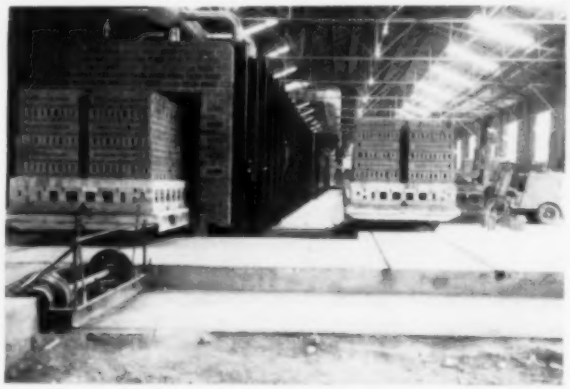
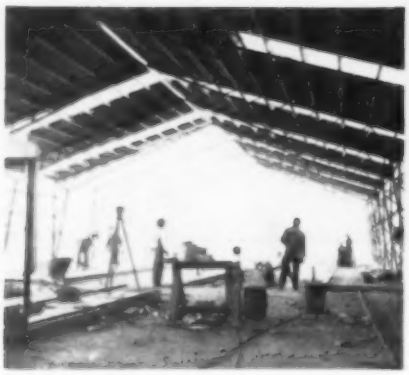
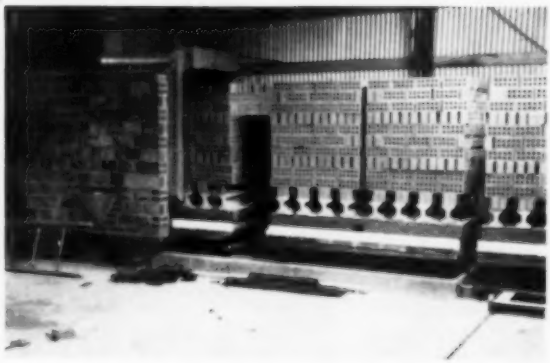






HERE ARE THE FACTS:

OHIO TUNNEL KILNS are the best suited to YOUR PLANT! They are made for all types of ware and both the largest and smallest sized production.

OHIO TUNNEL KILNS produce the most UNIFORM BURNING and even colors with the least possible loss!

OHIO TUNNEL KILNS cost less installed in your plant for they are produced in volume at a minimum cost, all the material is fabricated in our own shop and erected by our own crews!

OHIO TUNNEL KILNS will fit your operation and pocketbook! All of the exclusive features are yours at no extra cost.

***VISITORS** are always welcome at our shop and when you are close to central Ohio we would appreciate your stopping in. We will be glad to arrange to have you vist both "in-operation" and "under-construction" installations.*

FAST • EFFICIENT
CLIPPER
LOW COST

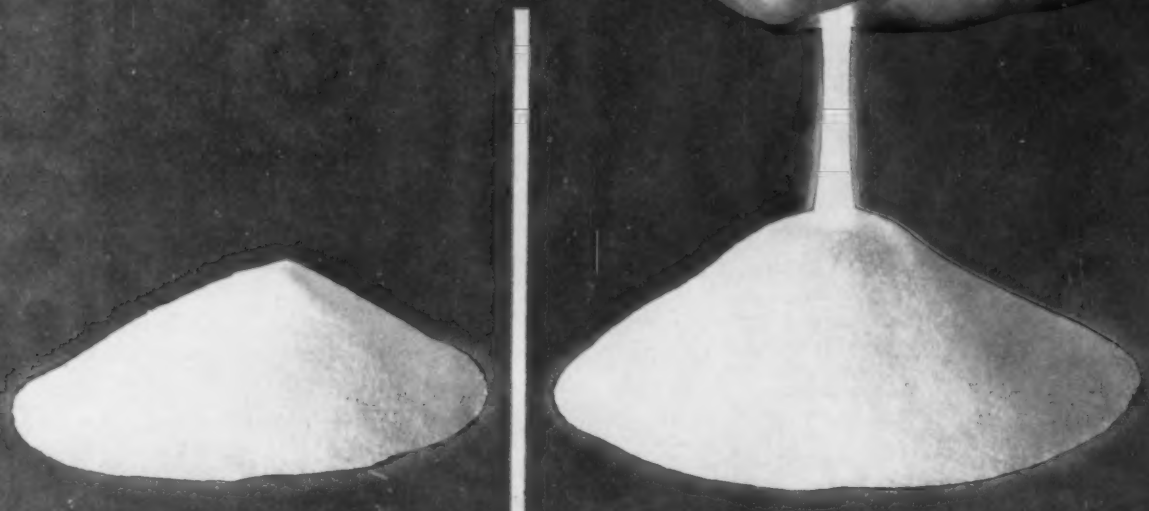
OHIO KILNS
GRANVILLE, OHIO • JU 2-2571

Circle Service No. 42

Circle Service No. 43 ⟶

a little / more *TAM* opacifier goes a long way!

By using either a little or a little more Superpax A, you can effect substantial savings. It works two ways:



a little . . .

Using a lesser amount of Superpax A, you can obtain opacity equal to that of other brands. This means that your actual cost for Superpax A can be considerably lower than that for ordinary opacifiers.

a little more . . .

By using the extra hiding power of up to 50% more TAM opacifier than normal, it is often possible to reduce rejects by as much as 20%. This saving far exceeds the cost of the additional opacifier used.

IN EITHER CASE... you'll find it economical to use TAM opacifiers. Write our NYC office for detailed information on the complete line, try a sample run under your own conditions and take advantage of the cooperative service provided by our Ceramic Engineers in the field or laboratory.

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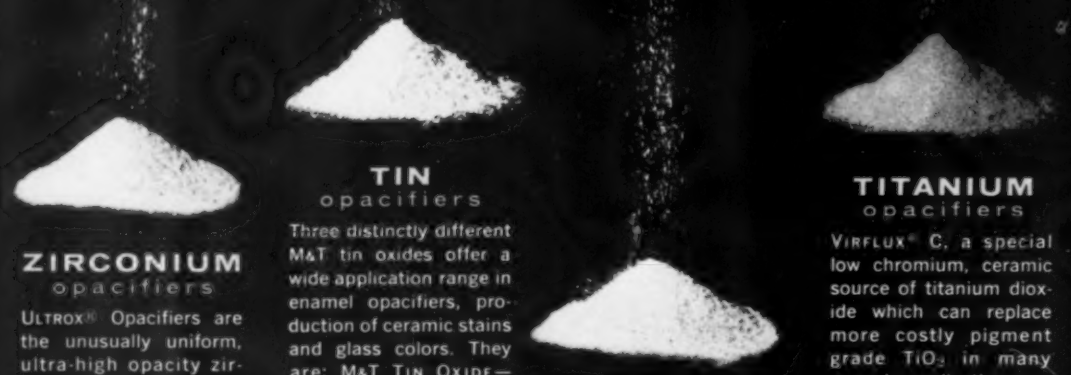
TAM *... the complete line*

• SUPERPAX A • SUPERPAX • ZIRCOPAX • DOUBLE SILICATES • OPAX • OPAX S • TREOPAX

Your final product is the only important test of OPACIFIER PERFORMANCE



ZIRCONIUM opacifiers

ULTROX® Opacifiers are the unusually uniform, ultra-high opacity zirconium silicates originally developed by M&T. Today there are three grades: ULTROX STANDARD for whites and colors; ULTROX 500W for strong whites and pastels; and ULTROX 1000W for ultra-whites to match enamels.

TIN opacifiers

Three distinctly different M&T tin oxides offer a wide application range in enamel opacifiers, production of ceramic stains and glass colors. They are: M&T TIN OXIDE—LIGHT, M&T TIN OXIDE—SPECIAL WHITE, and M&T TIN OXIDE—PRIME METAL.

ANTIMONY opacifiers

For iron and steel enamels, you have your choice of M&T SODIUM ANTIMONATE and M&T ANTIMONY OXIDE.

TITANIUM opacifiers

VIRFLUX® C, a special low chromium, ceramic source of titanium dioxide which can replace more costly pigment grade TiO_2 in many ceramic applications.

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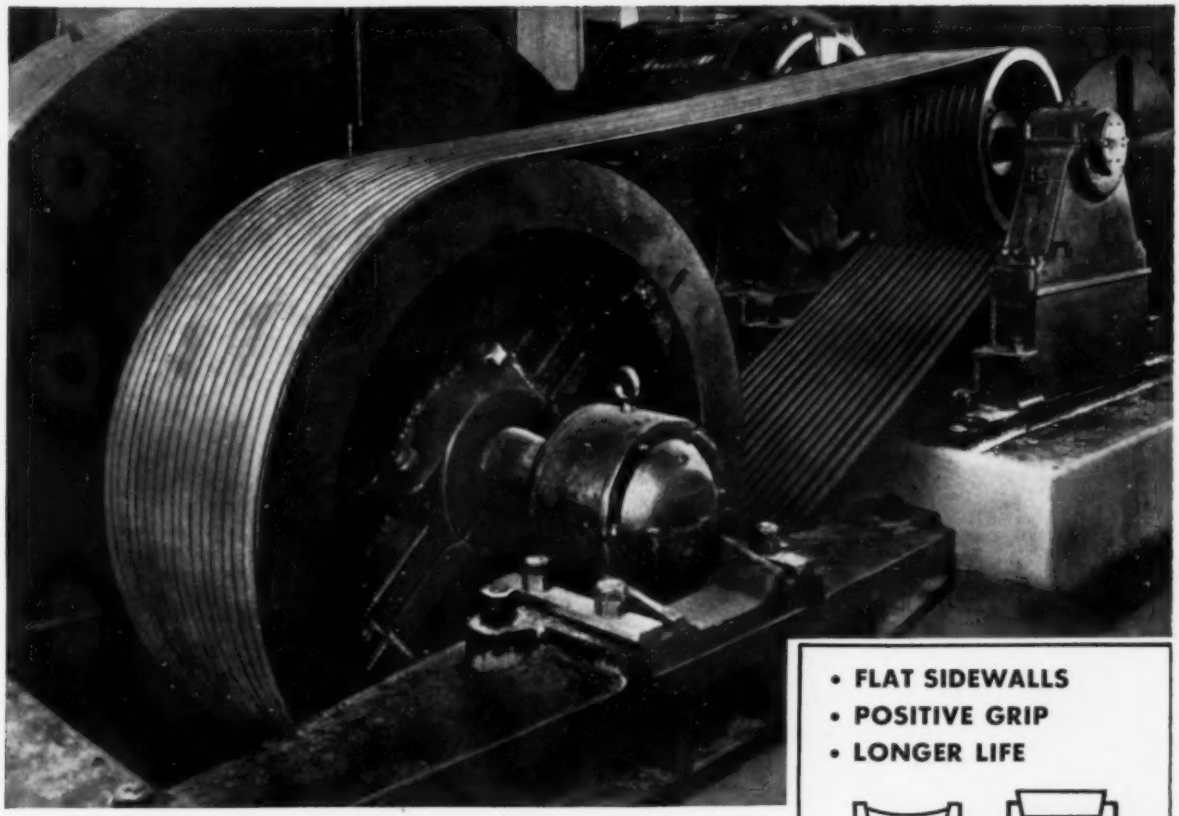
Excellent performance in your glazes or enamels is the single objective of our manufacturing methods, our laboratory testing, and our research and development work. That's why we use so much plant know-how in our test procedures—and that's why we use kiln firing as a definite *practical* check on opacifier performance *before* shipment.

Circle Service No. 44

M&T Chemicals

METAL & THERMIT CORPORATION
General Offices: Rahway, N.J.



- **FLAT SIDEWALLS**
- **POSITIVE GRIP**
- **LONGER LIFE**

ORDINARY BELT CONDOR V-BELT

Note how Condor V-Belt at right prevents sag in the "power line".

1. ***All cords of the strength member pull equally . . . deliver maximum, uniform share of power!***
2. **Firm sidewall pressure avoids power waste . . . MORE GRIP, LESS SLIP.**

THE SMOOTHEST RUNNING V-BELTS MADE!

Because Condor V-Belts ride properly in the groove, they run smoother, cooler . . . even on the toughest drives.

The flat sidewalls of Condor V-Belts insure that the lower, compression area of the belt properly supports the load-carrying strength members on a straight line, to permit all the cords to contribute their full share of the pulling power. This prevents premature failure caused by tighter cords being overworked. It also exerts a firm side-grip on the groove to avoid belt slip and power waste.

"More Use per Dollar"

Write for Bulletin 6868

TODAY CONDOR V-BELTS ARE DELIVERING 40% MORE HP

Continued improvements in Raybestos-Manhattan's Condor V-Belt design over the years have resulted in an engineering advance of major importance to V-belt users. The Condor V-Belt you install today has the 40% greater power capacity formerly available only in a *premium* V-belt construction . . . *without the premium price!*

R/M engineering utilizes *special super-strength synthetic fiber* strength members in Condor V-Belts. Micro-positioned in special heat dissipating rubber, they make possible an average of 40% more power capacity and longer life . . . assure a smoother, cooler running drive even under shock loads!

Synthetic strength members virtually eliminate belt stretch and length matching problems. *More* power delivery at *lower* power cost is practical for *every* drive! When required, V-belts are also available in oil-proof, heat resistant and static-proof construction.

Chances are the Condor V-Belts in your inventory have this 40% reserve power capacity. Be certain the next belts you buy are Condor V-Belts... the premium V-belt construction at the standard V-belt price.

RM-627

BELTS • HOSE • ROLL COVERINGS • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES

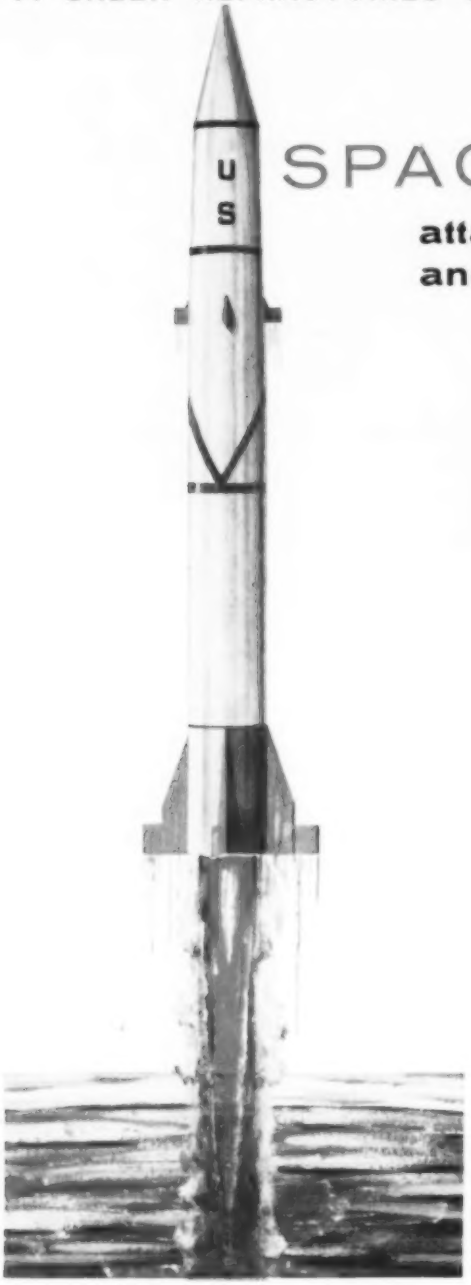
MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls

Circle Service No. 45

A. P. GREEN REFRACTORIES SERVE THE WORLD'S INDUSTRIES



SPACE...

attained through imagination and refractories

When the original Redstone missile soared aloft at the Cape Canaveral launching site, mankind took a big step toward the reality of interplanetary travel, weather forecasting, and other dreamlike by-products of the space age. A. P. Green Company engineers were associated with the missile program from its early beginning. Their job — to develop heat resistant refractory materials to withstand the extreme temperatures and thrust encountered in the testing of today's missiles. The refractory surfacing of the test launching pads at Cape Canaveral is an A. P. Green development . . . the original pads are still giving excellent service.

This is a photograph of the A. P. Green KS-4 castable refractory used for surfacing the launching pads in the original test. It illustrates the gunned castable refractory panels as installed on the pad foundation. This special refractory was required to withstand the tremendous heat and thrust encountered in the firing of missiles such as the Redstone.

50
FIFTY YEARS OF PROGRESS
A. P. GREEN FIRE BRICK CO.

A. P. GREEN
FIRE BRICK COMPANY
MEXICO, MISSOURI U.S.A.

MANUFACTURERS OF A COMPLETE LINE OF HIGH QUALITY REFRACTORIES INCLUDING: FIRE CLAY, HIGH ALUMINA, SEMI-SILICA, SILICA, MULLITE, SILICON CARBIDE, ZIRCON, AND BASIC PRODUCTS.

Circle Service No. 46

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A dream projected into the future, a base rooted deeply in the past, and a modern concept of industrial management have been the tools with which the managers have brought the former A. P. Green Fire Brick Co., a single plant located in the heart of the country, to a complex of 16 plants, on the North American continent with a growing list of refractories products and 10 plants in foreign lands to span the globe.

During a decade marked by rapid development in new products and increasing competitive pressures, a program of expansion undertaken with a positive plan has resulted in an increase of sales, profits, and net worth of over 300%. Such a history and record stands in this 50th Anniversary year of A. P. Green Fire Brick Co. life. Established in 1910 and for 40 years a proponent of single plant operation in the United States, the Green Co. has changed its basic policy in recent years to conform to changing times and has implemented its nation-wide sales organization with plants strategically located in every producing area. (At this time, however, there were plants in Canada and some foreign countries). After 50 years of growth it is apparent that sound planning and timely action have contributed to the success of the company.

In this issue, the editorial staff of BRICK & CLAY RECORD briefly reviews a half century of the Green Co. service to the Nation in time of war and in time of peace. In addition to a look at the physical growth of the company, the resulting ability of the company to offer greater service, and the growth of skills of employees in research, in production and in customer service is reviewed.

A. P. Green Fire Brick Co... A Manufacturing Giant

The A. P. Green Fire Brick Co., a business that was founded on an ideal, has grown to exemplify the spirit of achievement in manufacturing methods, capacity, quality products, dependability and service to the world's industries.

That the policy of building one super-efficient plant was successful can hardly be denied, for today the Green Co. has at Mexico, Mo. the largest single producing plant devoted exclusively to the manufacture of fire-clay refractories in the world. It produces some 70,000,000 brick equivalent a year and employs some 1,200 workers. Excellent planning has kept this operation efficient and capable of producing top quality fireclay refractories.

In addition, the Green Co. has a plant in every significant refractories producing area. Sales have boomed as each additional producer was added to the total capacity of the company. A complete variety of refractories is being produced by the company and its sales department has a complete line of refractories to offer its customers.

The Green Co.'s tremendous success is reflected in its business for 1959 which showed a net sales of over 39 million dollars. This revenue was accrued through sales from their 16 plants located in the United States and Canada, and excludes foreign sales.

The rated capacity of the Green Co. plants in the United States is approximately 155,650,000 nine-inch brick equivalent per year. The rated annual capacity of specialties, grogs and clays is approximately 110,000 tons per year.

The Company has approximately 2500 employees in the United States.

Green Co. products manufactured in the United States are exported to about 65 countries every year.

The Green Co. maintains a complete research and engineering division. Chemists, ceramists, engineers and technicians provide laboratory quality control of products at each of the Company's plants... and are constantly engaged in applied research, product design and new processing and packaging methods. In addition, the Company has a fundamental research laboratory which is delving into the inherent characteristics of basic materials themselves.

This Company exemplifies an organization that is alert to business requirements and opportunities. In the manufacturing plants no effort is spared to change and improve processing to attain quality, lower costs and reduce production time. Quality and new products are also the responsibility of the research division which has performed so successfully. Topping the alertness in sales, promotion, distribution, service, production and research, a weather eye is constantly kept on the future. All plans, regardless of the department in which they originate, are always influenced by these effects on the future or the future influence upon the plan.

The editors emphasize this alertness because it is so prominent at the Green Co. Every man from brick wheeler to President is equally alert. It is a good contribution to the welfare of the United States since so much of our life and activity depends upon the alertness and progress in the refractories industry, an industry that is so essential to America and its defenses.

The entire refractories industry has followed this line of thinking and the Green Co. is a prime example.

The Editors

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Plants & Dates Acquired

1933—A. P. Green Fire Brick Co., Ltd., Toronto, Canada
1955—A. P. Green Fire Brick Co., Ltd., Claybank, Saskatchewan, Canada
1950—Valentine Fire Brick Co. Woodbridge, New Jersey

General View of Mexico, Mo., plant and home office

1954—A. P. Green of Texas
Sulphur Springs, Texas
1956—A. P. Green of Idaho
Troy, Idaho
1956—Pyro Refractories Co.
Oak Hill, Ohio
1956—Durex Refractories Co.
Jackson, Ohio
1956—Portsmouth Clay Refractories Co., South Webster, Ohio
1957—Richard C. Remmey Son Co.
Philadelphia, Pa.
1958—Stevens Fire Brick Co.
Macon, Georgia
1958—Standard Fire Brick Co.
Pueblo, Colorado
1959—Climax Fire Brick Co.
Climax, Pa.
1959—Dixie Fire Brick Co.
Birmingham, Ala.
1960—A. P. Green Fire Brick Co.
Tarentum, Pa.

A FOUNDER WITH FORESIGHT

From a most humble beginning 50 years ago, the Company grew under the leadership of Mr. Green. In the spring of 1910, he initiated the operations which resulted in the formation of the Company that bears his name. He served continuously as President until 1946, and Chairman of the Board of Directors of the Company until his death in 1956.

His eternal vigilance and drive carried the business successfully through periods of depression as well as good times. His vision was always in evidence. He was always aware of the growth of our national and world economy, carrying this knowledge into the company thinking and planning.

A. P. Green

STATEMENT OF POLICY by W. S. Lowe, President

The A. P. Green Fire Brick Co. is engaged in the production and sale of refractory products and services. Using the funds invested by over 2000 stockholders and through the efforts of all our employees, we must render a service to our many customers who are a portion of the public. Therefore, we have an obligation to each of these groups. The company must operate profitably, maintain products and services in quantity and quality, create an atmosphere in which the employees may obtain work satisfaction and prosperity and, in addition, recognize a responsibility to the society within which it exists.

Since the economy in which we operate is an expanding, free enterprise system, it is an obligation of the company to maintain a growth equal to or greater than that of our industry or over-all economy. To accomplish this we must adjust to the customers' needs in all product lines and be alert to changing requirements in every geographic area. Since the proper and balanced development of a company is predicated upon attention to the many functions which it performs, management must maintain an alert and sensitive reception to all those engaged in earning a living within its economic influence.

In meeting the pressures of our changing and expanding society, it is recognized that the company has obligations on a much broader scale than formerly realized. However, to meet these broader obligations the company must be operated on a sound financial basis, thus permitting continual growth and development of our products, services and employees.

Growth From 1910 is Rapid

View of loading platform during beginning of century

Policies decided upon in 1910 with the establishment of the new company have been credited with much of the early success of the enterprise. Foresight in plant capacities and customer service was the key. The strong program of customer service adopted by the company bore early results. The plant, that at the outset operated at less than half of capacity, soon was unable to produce the tonnage needed because of vigorous sales efforts. Thus, by 1917, plant capacity was more than double the ten million brick a year production of 1910. Manufacturing facilities were expanded and remodeled again and again to meet rising demands.

High Duty Products

High duty products were the base on which the enterprise was built. Flint clay and diaspore taken from "potholes" in the southern areas of Missouri were blended with the high quality plastic and semi-flint clays of the Mexico region very economically to produce high alumina products, which would meet the requirements of the many industries dependent upon refractories.

Mo. Products Superior

A Missouri product could be shipped to distant markets because of its superiority thus requiring a sales force far removed from the plant and in almost every industrial area. The first branch office was established in Chicago in 1914 and within two years district offices were also set up in St. Louis and Tulsa. Overseas potential was considered early in the history of the company and salesmen were dispatched to South America, Europe and Asia to offer Missouri products for those jobs too tough for any refractory except the best.

Product Change and Progress

American refractory producers were just beginning to mechanize when the Green Co. was established. Hand-made, soft mud brick had been the standard product for 200 years, and many customers still demanded these in preference to the superior pressed product. The standard fire clay mine was a shaft affair with mules and large numbers of miners required to meet relatively modest clay requirements. The steam engine was used to supply power to the grinding departments and the first dry presses. The hot floor used in hastening drying of the soft mud product and the requirements for power transmission over line shafts thwarted plant efficiency by imposing strict limits on machinery layout.

Abandon Shaft Mine

In 1916 the shaft mine at the plant was abandoned and the pioneer open pit mine was started. In spite of

methods which today would be considered primitive, this change marked an important step forward and the resulting economies allowed the company to compete more effectively than ever before. Later as modern mining equipment was made available these improvements were eagerly accepted and installed to further reduce the cost of winning raw materials.

Basically, the use of diaspore, the high alumina material usually found in the center of the flint clay deposits of southern Missouri, was the prime ingredient with which these high alumina products were developed. During the early years, much diaspore was used as road material because its valuable refractory properties had not been discovered. Then the growing research and development efforts of the Green Co. into diaspore refractories paid off with a family of products superior in many respects to any previously available.

These products included standard shapes of fire brick, plastic refractories, castables and mortars. The mortars and other refractory specialties were fully as important in the over-all development of the company as were the high alumina brick. It was these special products that carried the Green trademark to the four corners of the earth and paved the way for other less glamorous products.

Insulating Brick Results

Among the new products that came from the research department was the insulating brick with a range of operating temperatures from 2000° to 3200° F.

All of these new products required additional machinery and equipment for their manufacture, while the increase in the sale of the more prosaic lines also added pressure on the productive facilities. In 1925 a highly successful tunnel kiln was built at Mexico, Mo. This was one of the earliest tunnel kilns installed in any American fire brick plant and its success did much to further the general use of tunnel kilns throughout the entire refractory industry. It was an oil burning installation with a capacity of 30,000 brick a day. Two years later a second tunnel kiln was constructed, followed by a third in 1929 and a fourth in 1930. With a productive capacity of over 50 million brick a year, sales were being made farther and farther from the plant. The sales office that had been opened in London was supplanted by the first of several overseas plants that were to be built to meet the challenging national economic changes that took place during the twenties and thirties.

In the midst of the depression a courageous step was made by the company that illustrates its continuing faith in America and the refractories industry. A major expansion program was undertaken with over a million dollars of borrowed money. Buildings were constructed and machinery and shipping facilities were installed which provided for greater production . . . all at a time when industry in general was at a low ebb. Provision was made in the construction of the buildings for orderly future growth. In the years that have followed, additional bins, grinders, batching equipment, presses and four more tunnel kilns were added within areas provided for when the main building was originally designed.

Reappraise Plant Policy

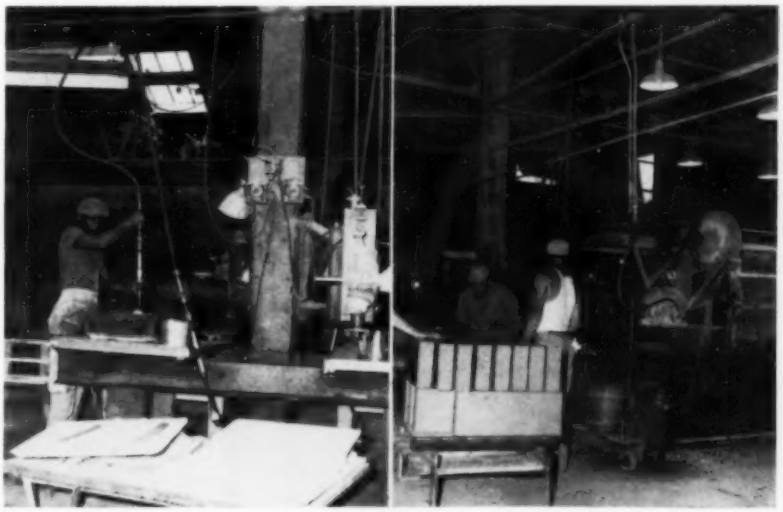
It was in 1946, following the war, that changing conditions required a reappraisal of the single plant policy. Rapidly rising freight rates, which were increasing much faster than the selling price of refractories, erased the advantage of Missouri brick.

Research, a field of effort in which the A. P. Green Co. had been a pioneer and leader, had by 1946 accurately analyzed and measured those factors which had given the fire clay refractories of the Missouri region such high quality ratings.

Once these factors had been scientifically evaluated and generally understood, their reproduction in other areas was possible and often times economically justified. Since the company had maintained a strong program in research and product development, it was quickly aware of this change in condition and realized the necessity of making compensating adjustments.

At the same time, the requirements of the using industries had emphasized the gradual growth of the potential on non-clay refractories. These materials had never been of primary interest to the company. The nationwide sales organization that had been built over the years was organized on a growth program that required a continuing development of products and customer services.

All of these factors were vital in the decision to expand production in other refractory producing areas throughout the country. Quality and service were reappraised in the light of new conditions, and it was decided to move into all of these areas with a comprehensive list of refractory products.

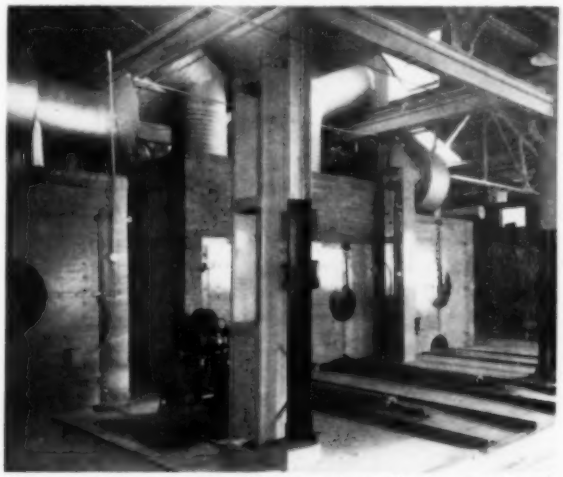


The manufacture of silicon carbide refractories is a relatively new but highly profitable addition to the Green refractory line.

Modern Machines, Processes

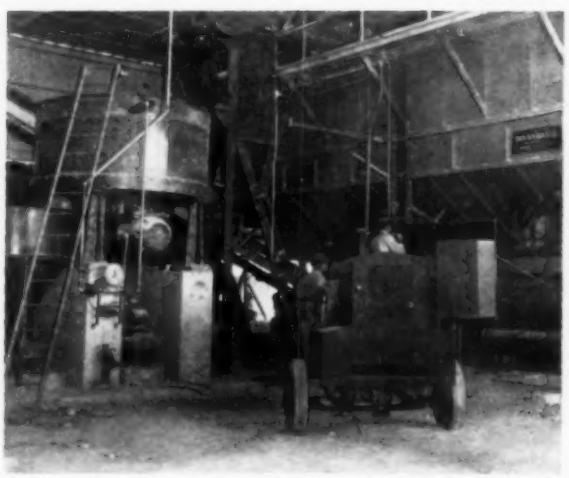
Vast areas are needed in the manufacture of refractories products as illustrated by this photograph taken at the Mexico plant.

Stockpiling raw materials at the Pyro plant. Each plant carries enough stock for months of production.



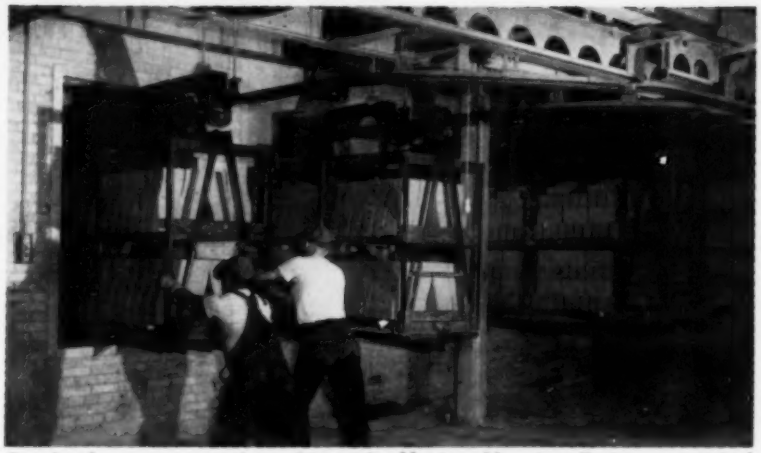
Battery of dryers at the Mexico plant. Over twenty such tunnels are in operation.

Modern bins store the raw material at the Dixie Fire Brick plant, Birmingham, Ala. Note the modern scale and feeder below bin.



Automatic mixer and combination bin-batcher, a modern ensemble of equipment at the Stevens plant, Macon, Ga.

Make Refractories



Overhead conveyors such as this at the Mexico, Mo., installation are typical of the modern type manufacturing methods utilized at all Green plants.

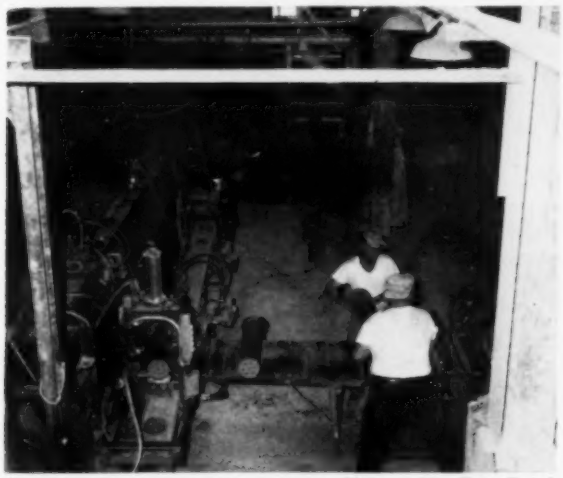
Modern Machine, Processes Make Refractories

Because the Green Co. is called upon to supply almost every type of refractory used, it must be equipped in its vast array of plants to make the refractories and to successfully apply the most modern processes for their manufacture.

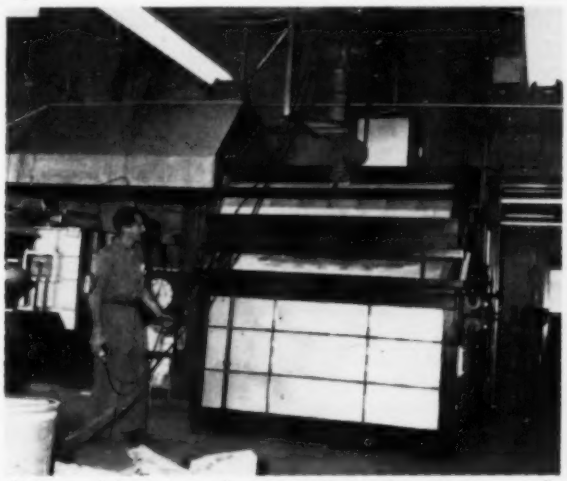
The cycle of manufacturing involves preparation of raw materials, forming into products and final firing into solid form. The non-fired products are also treated in a modern manner.

Since the great burst of expansion from 1950 to 1959, twelve plants have been added and to modernize them over $10,000,000 has already been invested. Another $7,000,000 has been earmarked for expansion and modernization plans in the next four or five years.

The editors here pictorially illustrate products and processes with photos taken at all Green Co. plants.

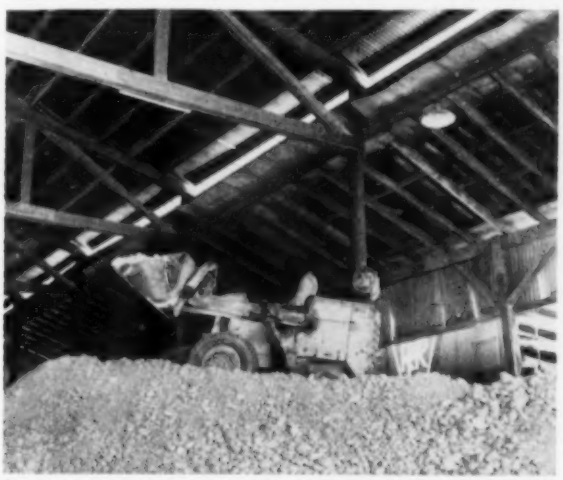


Horizontal extrusion of tuyeres at Climax, Pa. Fire Brick Co., the largest manufacturer of this special product.



Bell-type kilns are used extensively for burning extremely high temperature shapes at Remmey plant, Philadelphia.

Modern presses at Valentine Fire Brick, Woodbridge, N. J., press out most complicated shapes with uniform density throughout.



Raw materials are carefully stocked at Dixie Fire Brick Company., Birmingham, Ala. and handled in bulk with modern front end loads.

Air view of Valentine plant in heart of heavy industrial area.

VALENTINE FIRE BRICK CO. GIANT STEP TO THE EAST

Manager—W. H. Peterson, Jr.

Located on tide water in the industrial complex that makes up Northern New Jersey, this plant has long been an important factor in the refractory business on the East Coast.

The purchase of this Woodbridge Division gave the Green Co. a competitive producer in the heart of a great industrial area. Its products were strictly complementary to the lines produced in Missouri although its strategic location was such that the research developed products of the west could be economically produced and readily sold in the area.

Using a local glacier deposited clay, Valentine made a semi-silica product noted for its resistance to shrinkage at high duty ranges. This was a product much in demand for furnaces in the metal working trades and for kilns for the ceramic producers throughout the Eastern coastal region.

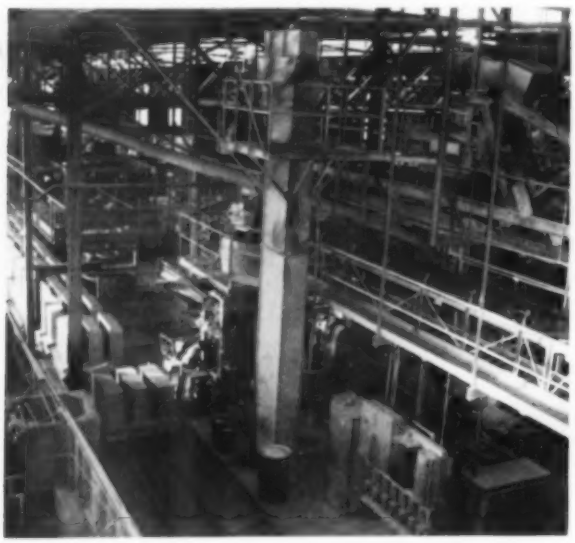
In 1956 fire struck the plant in the midst of a general sales boom, and the plant, with the exception of three tunnel kilns and a limited amount of shed area, was destroyed.

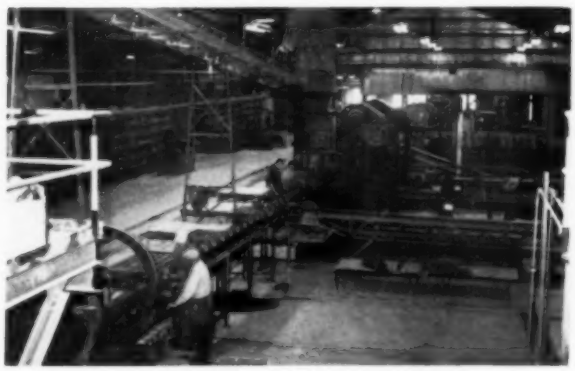
When the plant was rebuilt it included the most advanced production techniques developed over the past few years. It was also enlarged to better supply the East Coast.

To the established repress method of manufacturer, a dry press operation was added. Greater control of raw material allowed the Valentine operation to advance the recommended maximum use temperatures of its standard products. To obtain this control, the mining operation is checked and tested more frequently and diligent care is taken in handling raw materials. To this end, automatic batching equipment was installed and together with the use of modern machinery, one of the nation's oldest plants remains among the most efficient.

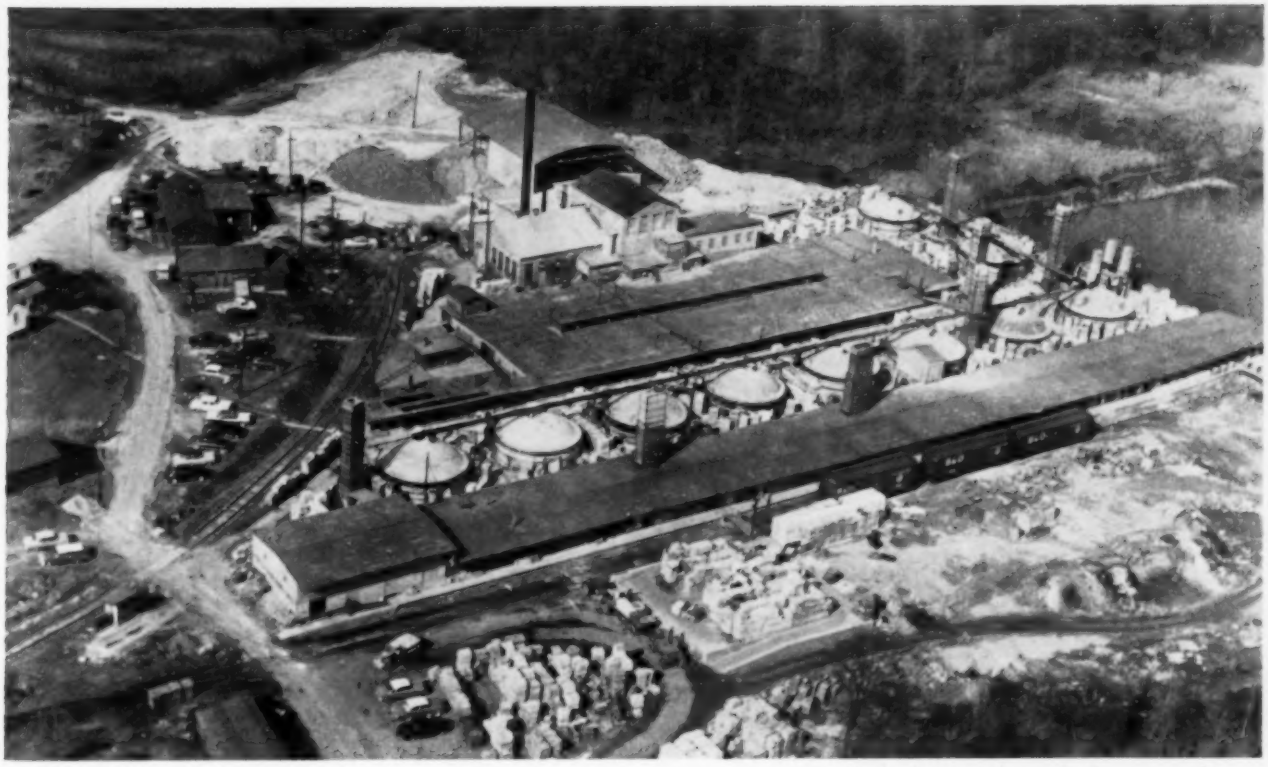
In rebuilding the Valentine plant, the Green Co. invested $1,500,000 in 1957. This was done after a quarter-million dollars was invested in a dry press line. Now plans are underway to add more dry press facilities to the plant and remodel the firing system. Laboratory space will be increased.

Dry press line at Valentine Brick



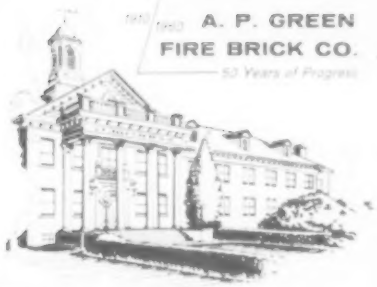


Stiff mud production and repress is major process at Valentine.



Products from Oak Hill Plant

Both hand-made and dry pressed products are manufactured at the Oak Hill, Ohio Pyro operations.



Pyro Refractories Division

Adds Southern Ohio Products

Manager—A. C. Sanger

Stiff mud and repress, dry press and hand made shapes of Ohio fire clay and Kentucky flint clays are produced at Oak Hill, Ohio by the Pyro Refractories Division. Production of fire-clay materials formerly carried out at three Ohio plants has been moved to this location for greater efficiency and better control.

The Oak Hill plant has been largely rebuilt, with entire sections replaced with new equipment and other areas modernized to bring plant practices up to Green standards.

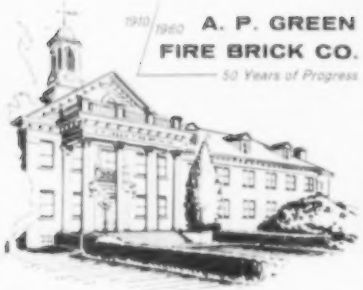
Strip mined clay is hauled to the plant and stored in open piles and under sheds for later use.

A rebuilt grinding section and batching area resulted in higher quality products because grain size and particle size distribution is now more effectively controlled. Operating in one of the most industrialized areas in the nation, the Oak Hill plant has always produced a large number of special shapes and other refractories specified by customers.

Repress techniques are used to produce large quantities of these special materials although the more complicated items of limited production are hand molded. By combining the equipment from three Ohio plants, an increase in capacity has been achieved.

The three Pyro plants—Oak Hill, Jackson, and South Webster—are under the direction of a single manager who directs the combined operation. Normally each plant is under control of a separate manager; however, in this case, the close geographic locations allows one man to have close supervision of the entire group.

The Oak Hill plant was ideally located for combining operations of several plants. It was therefore completely overhauled. This overhauling involved changes in grinding, screening, batching and additions to the stock sheds, dryer and kilns. Future plans for this plant encompass the completion of the modernizing process by this midwestern company.



The Pyro Refractories Division plant at Jackson, Ohio represents Green's entry into the silica brick phase of the refractory business. One of three plants in the Southern Ohio area purchased by Green in 1956, this plant has been completely rebuilt to change its major product from clay to silica. A washing operation in conjunction with the plant is located in the hills some distance from the manufacturing site. The Sharon Conglomerate, a deposit of clay bonded quartz pebbles, is mined, washed and classified in a unique operation. Designed to recover all of the usable silica, as well as to conserve water, the plant supplies a high grade raw material for further processing.

Production of all standard silica brick shapes is performed in a completely new grinding and press room while a silica gunning mix is manufactured in a new building well removed from the balance of the plant.

Large pebbles are used as feed stock in the grinding plant, medium sized are used to make "Gunpatch", a special silicious mix designed for gunning into place, and the finest grains are sold as construction sand or to users of glass grade silica.

A roll crusher and a rod mill, together with a highly efficient screen and delivery system, processes and delivers ground silica into proper bins. Batching is semi-automatic.

Gunpatch mix is produced here by coating quartz grains with a shell of fireclay. This product is used by foundries and steel plants for furnace maintenance and repairs.

All clay grinding and preparation for the gun mix products is done at Oak Hill, the nearby plant.

The Jackson plant was completely rebuilt to modernize gun mix production and add silica brick production . . . a one million dollar project.

Products from Jackson Plant

Silica brick, Silica mortars, Silicious gunning refractories.

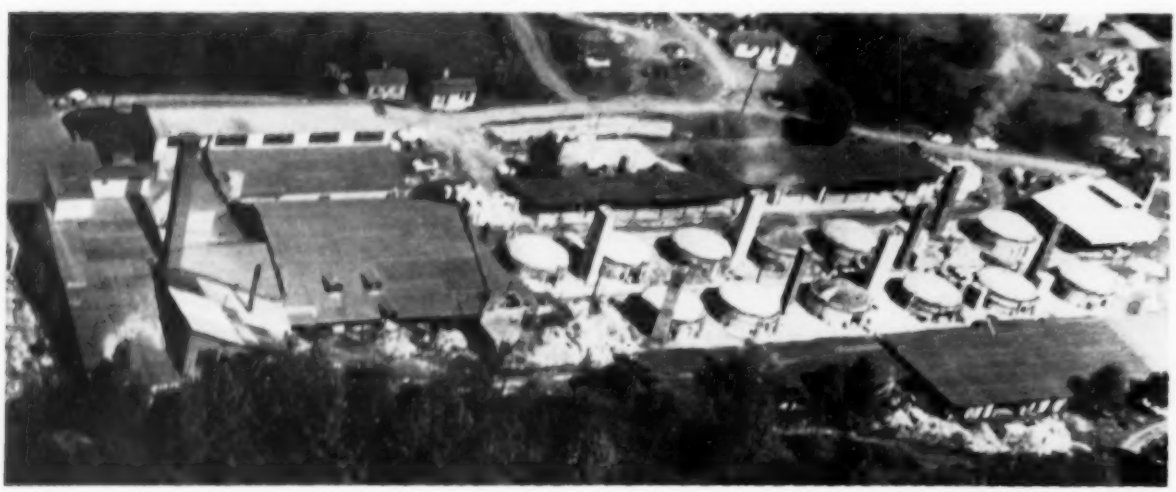
Pyro Division's South Webster Plant Specializes In Dry Pressing

The third Green plant in Southern Ohio, South Webster, is a major producer of dry press refractories. With the special products, repress and hand made production of the area concentrated in the Oak Hill and Jackson plants, South Webster is able to devote all its attention to dry press, fire clay brick and specialties. This operation, like Oak Hill, depends on raw material from both Ohio and Kentucky. Plastic fire clay is blended with the flints from south of the Ohio River to produce medium and high temperature service products.

This facility is located close by the Oak Hill concentration of refractory producers.

Products from South Webster Plant

Fire clay brick, refractory specialties —mortars, plastics and castables, industrial insulations, grogs and fire clay.

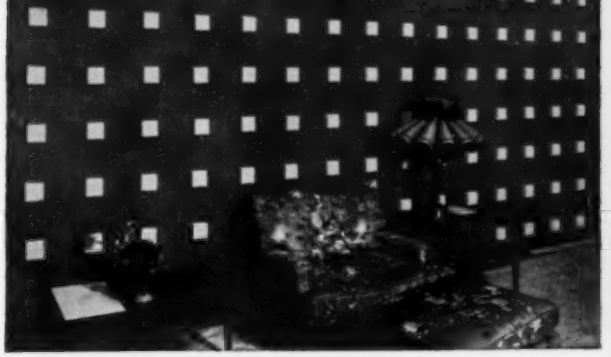


Circle Service No. 47 ⟶

To Help YOU Sell Block

This is one of a series of Besser block promotion ads appearing currently in architectural and building publications to pave the way for a more widespread use of concrete block.

Harold Berry and associate, Donald Speck, reached new heights in concrete drama in the $6.5 million Home Furnishings Mart at Dallas, Texas.



look how beautiful walls can be... **with Standard Vibrapac Block**

Yes, it's true! Nothing but standard Vibrapac block was used in these walls. Yet look how dramatic they are. The secret, of course, lies in the creative imagination of contemporary architects — who see in concrete masonry a new idiom for creative expression.

Consider the boundless patterns available with standard block, then review its proven features: permanence — high acoustical and insulating values — low maintenance cost — and, above all, its priceless fire safety and storm safety. Small wonder this trusted old friend, Vibrapac Block, is sparking architects and sparkling walls everywhere. Keep it in mind for forthcoming projects.

BESSER Company
Alpena, Michigan, U.S.A.
First in Concrete Block Machines

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Climax Fire Brick Co. World's Largest Tuyere Producer

Manager—
H. T. Murphy

Products from Climax plant

Tuyeres, stove checkers, cupola blocks, fire clay brick and special shapes.

The world's major producers of Bessemer converter tuyeres is Climax Fire Brick Co. This Green plant is located near New Bethlehem in the Pittsburgh area and is in the most picturesque of all Company plant locations. Lying astraddle Red Bank Creek, its rural location belies its strategic importance in the refractories industry. The Bessemer Convertor is greatly dependent on the products of this single plant.

High grade Pennsylvania fire clay is taken from a drift mine and made into tuyeres, stove checkers, and cupola blocks. The tuyere, a large round shape pierced longitudinally with a varying number of holes designed to provide air passages at the bottom of giant steel making vessels, is produced by the stiff mud process. Dried and fired in a manner similar to any large shape, the resulting product is shipped to the four corners of the world . . . wherever Bessemer convertors are operated.

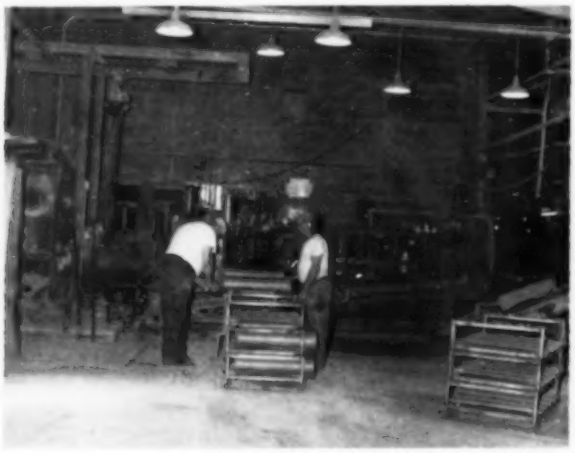
The plant has grown from a clay mining and barge operation established some 130 years ago, and today fifth generation names are still on the payroll. Recent modernization and mechanization programs have maintained a high degree of efficiency. The plant is characterized by the use of some of the smallest periodic kilns in the refractory industry, dictated by the nature of its major product.

Additionally, dry press and repress methods are used to produce other products. Brick forming equipment includes a modern hydraulic press.

High on the list of the plant's many unusual features is the natural gas field, owned and operated by Climax, which supplies fuel for its kilns. Over 100 wells are currently in operation.

Climax was completely rebuilt before it was purchased, so little was left for the new owners to do. However, plans are underway to install variable speed motors and other modern equipment.

Mechanical handling is generally practiced at all Green Co. plants.



A modern roller conveyor delivers tuyeres to drier at Climax, Pa. Fire Brick Co.

Idaho Plant Key Supplier To The Northwest

Manager—M. A. Buchan

Products from Troy plant

Fire clay brick, super duty brick, refractory specialties—mortars, plastics, castables—industrial insulations, grogs and fire clay.

The Green plant, built on the site of a previous plant at Troy, Idaho, is the Company's anchor in the Northwest United States. Operating in a sparsely settled area, its production is shipped throughout a vast geographic area serving vital industries with a growing list of high quality refractories. Supplied with a variety of useful clays found in the region, the operation is able to produce high duty and super duty products. Its raw material and isolated location has justified the installation of a new rotary kiln for calcining . . . the first Green Company plant away from the mid-continent area to get this type of equipment.

The Troy, Idaho plant was built at a cost of $750,000 . . . a calcining plant is part of the operation. The calcining kiln is designed to produce 2-½ tons of grog per hour. An expansion in the specialties line and improved firing facilities are contemplated.

A major revision is planned at the Macon, Ga. plant, which was acquired in 1958. New mixing and blending equipment has been installed. Specialties will be added, the firing overhauled, and clay preparation modernized.

Stevens Fire Brick Co. Supplied Southeast Ceramic Industries

Manager—Willard Renner

Products from Macon plant *Fire clay brick, refractory specialties—mortars, plastics and castables—grog and fire clay.*

Specializing in production of refractories for the ceramic industries of the southeast, the Macon, Ga. division of A. P. Green has been immune to the recent fluctuation in the demand for refractories by the metal working industry. Using the local kaolins and importing fire clays from Alabama, the raw material situation is exactly reversed from that at Dixie Fire Brick Division, where fire clay is mined and kaolin imported.

Richard C. Remmey Son Co. Exotic Refractory Specialist

Manager—John G. Remmey

Products from Phila. Plant

Special refractories—silicon, carbide, mullite, zircon, 85 to 99% special high alumina brick, fire clay brick, semi-silica brick, refractory specialties—mortars, plastics, castables, ramming mixes—industrial insulations, grogs and fire clay.

Using practically every refractory raw material, every ceramic forming method and unlimited imagination, the Richard C. Remmey Son Co. subsidiary of A. P. Green Fire Brick Co. easily qualifies as the producer of the Company's most unusual refractories. Located in Philadelphia, Remmey serves a great number of specialized refractory users who have requirements that exceed the usual capabilities.

This is another of the plants that is older than the parent organization. Remmey is probably the oldest firebrick company in the United States continuously owned by one family. Its first plant was located in New York City. It has long specialized in the production of these special products. They are characterized by their resistance to extremely high temperatures, the unusual shapes in which they are manufactured, and small quantities represented by individual orders.

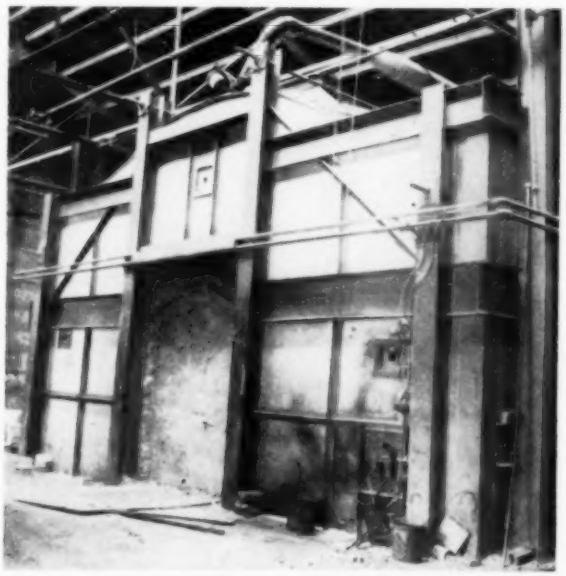
A research laboratory is maintained at the Philadelphia plant. This facility has developed the mullites, the silicon carbide, and the zircons. The bulk of semi-silica brick production long produced for normal service has been transferred to the Valentine division and the development of new products increased at Philadelphia. To this end special furnaces and kilns are used for production that can reach well over 3000° F., and work is underway on even higher temperature techniques.

Willingness to undertake practically any refractory problem has resulted in a reputation for this plant that is unsurpassed. Consequently it is often called upon to develop refractories for the newest applications.

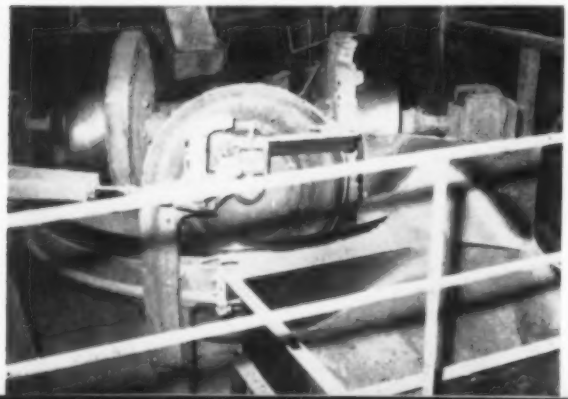
Remmey buys a greater variety of refractory raw material than any other. The raw materials are often of extremely pure grades and are purchased in a variety of grain sizes and quantities.

Work is completed at the Remmey operation which involves the installation of an entirely new specialties plant. Grinding and dry pressing facilities are being enlarged.

At right: High temperature kilns for firing Mullite and Alumina basic materials.



Below: SiC and other refractory mixes are blended in muller type machines.



KENNEDY VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

405 Park Avenue, New York 22, N. Y. • Factory: Danville, Pa.

KENNEDY Granular Materials Preparation System

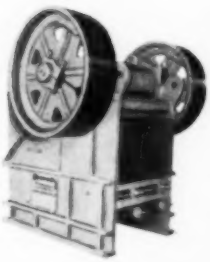
FOR THE CERAMIC INDUSTRY

From the initial raw material to the final blend of ingredients, the KENNEDY system provides the careful preparation, handling and accurate proportioning so necessary to quality ceramic products.

What are some of the advantages of the KENNEDY Designed System?

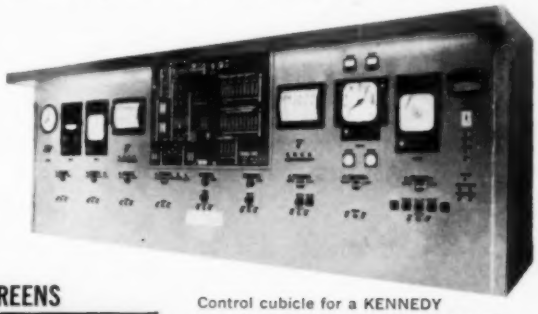
- Single responsibility for the performance of the entire system.
- Maximum utilization of raw material.
- Production of mixes to optimum maximum density within ±1%.
- Highest reproducibility.
- Complete automation; entire operation easily supervised at one station.
- Higher efficiencies, lower labor costs.

A KENNEDY Granular Materials Preparation System can be designed and built for any raw materials which require reduction, fractionation and blending.



KENNEDY CRUSHERS

KENNEDY Roll Crushers produce high quantities of product within narrow size ranges. KENNEDY Jaw & Gyratory crushers are important for primary and secondary preparation.



Control cubicle for a KENNEDY Granular Materials Preparation System

KENNEDY BALL, ROD & PEBBLE MILLS

The KENNEDY Air Swept Mill provides unusual control over production of fine grinds. The Pebble Mill eliminates metal contamination in grinds down to 25 microns.

KENNEDY SCREENS

KENNEDY open or closed multideck screens provide the close separation of size fractions required for the most effective use of the available raw materials.

KENNEDY PNEUMATIC CONVEYING SYSTEMS

These systems handle powdered or granular materials without motors, feed screws or other major moving parts. They are simple, flexible and economical.

KENNEDY AIR-FLOAT CONVEYOR

The smooth, durable, porous tile conveying surface of the KENNEDY Air-Float Air-gravity conveyor assures low-cost, maintenance-free conveying of granular solids.

• • •

KENNEDY's reputation for sound design, high performance and quality equipment is recognized in many industries all over the world. We invite your request for further information.

KENNEDY ROTARY KILNS

KENNEDY Kilns, Coolers, Firing Hoods and other accessories are important components of many ceramic materials preparation operations.

KENNEDY VAN SAUN

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405 PARK AVENUE, NEW YORK 22, N. Y. • FACTORY: DANVILLE, PA.

Primary & Secondary Gyratory Crushers • Jaw Crushers • Roll Crushers • Impact Breakers • Hammer Mills • Rod & Ball Mills • Kilns • Kiln Accessories • Dryers • Scrubbers • Screens • Pneumatic & Mechanical Conveyors • Complete Crushing, Lime, Cement & Carbon Paste Plants
KENNEDY Testing & Research Service

Circle Service No. 48

Standard Fire Brick Co. Serves The Rocky Mountain States

Manager—John L. MacFarlane

Products from Pueblo Plant

Fire clay brick, silica brick, ladle brick, sleeves, fire backs, sewer pipe, refractory specialties—mortars, plastics and castables—industrial insulations, grogs and fire clay.

Colorado's need for refractories is easily met from the State's high grade deposits of refractory clays. Standard Fire Brick Co., Green's Pueblo, Colorado division, has been a producer of both refractories and vitrified clay sewer pipe for many years. Acquired by the Green Co. in 1958, the line includes fire clay brick, silica brick, ladle brick, sleeves, fire backs and sewer pipe.

The production of sewer pipe has proven to be a stabilizing influence on the gross production of the plant . . . for as the primary and secondary metal production users of refractories in the area have reduced their demand periodically, the demand for pipe has risen. The area is one of more than average growth and the demand for real estate development has increased the production of this part of the plant's operation.

Again the willingness to take advantage of the local conditions has served the Company well. While it was recognized that the pipe portion of the Colorado operation did not fall in the primary area of the Company's interest, this did not prevent them from taking advantage of the capabilities of the situation to supply a saleable product.

Standard represents an extreme in the line of products that are produced as the production of silica and clay based refractories is seldom undertaken at a single plant. This somewhat complicates the problems of production, but in this case it is justified by the nature of the Colorado market. Mining, smelting, primary and secondary production of both ferrous and non-ferrous metals call for a wide variety of refractory products, and the total consumption does not require unusually large quantities of any one of the long list.

The acquisition of this Western property meant a rather complete overhauling so that A. P. Green products across the board could be supplied. Added to the plant were new batching and mixing systems. The stiff mud line was made more automatic. Silica brick manufacturing was completely rebuilt. And yet to come are a new office building, expanded sewer pipe production and more yard handling equipment, planned for 1960.

Products of the Dixie Plant

Fire clay refractories, ladle brick, ceramic, refractory brick and shapes.

Dixie Fire Brick Co. Alabama Plant Is Newest Addition

Manager—John W. Lewis, Jr.

The Dixie plant rounded out Green facilities for supplying the steel industry in the southeast. To properly do the job, changes in the plant are underway. These changes, to cost $200,000, include an automatic batching and mixing plant, and improved burning equipment. Also on the docket for further refinements are dry pressing facilities and increases in capacity.

Grog is prepared in modern grinding machines.

Dixie Fire Brick Co. at Kimberly in the Birmingham district is primarily a supplier to the steel industry. Its standard products are fire-clay refractories with a strong emphasis on ladle brick. Secondarily, it supplies large quantities of brick to the ceramic industry in the south and significant quantities of its products go to resale channels.

Its raw materials come from nearby fire clay mines and from the kaolin deposits of nearby Georgia. All of its products are made by the repress method or in the wood mold section.

Since this plant has been incorporated into the Green group, the mining activities of this plant and the one at Macon have been correlated to improve the efficiency of both operations . . . since the two plants compliment each other in the use of raw material. By utilizing the great reserves that each division has in its own territory and by operating the deposits at greater portions of their capacity, both plants are able to make savings in the cost of their basic raw material.

A modern high capacity grinding operation for raw clay at Dixie has been augmented with a new mill for the preparation of grog for the high temperature products produced. As in most A. P. Green plants, the use of fork trucks and front end loaders have done much to eliminate the hard labor of moving tons and tons of raw material and finished product through the various manufacturing processes.

Such plants as Dixie, clean and well kept with good systems, gain great advantages from the Research and Sales Divisions of A. P. Green. The gains of research, won at costs much greater than a single small plant could afford, can be put to immediate use. The end result, a better product, can be more aggressively sold by the combined sales efforts of the entire organization.

Sulphur Springs, Texas Aids In Supplying The Southwest

Manager—Paul Branstetter

According to Management, this year the Texas plant will get further attention in the dry press manufacturing section as well as batching, mixing, and material handling. As rapidly as research can study and recommend changes, they are put into operation.

After the Thermo Fire Brick Co. was incorporated into the Green Co. as a new Texas corporation in 1954, the results of long research at Mexico was adapted to the materials available to the Sulphur Springs plant. With a good demand in the Dangerfield steel area and the many foundries and other metal processing areas of the oil country, this plant has been a consistant producer of quality refractories.

Three Texas clay deposits are used in addition to a calcined high alumina clay brought in from Arkansas. Since the plant was acquired by Green, its storage facilities for the different clays have been greatly increased. With dry storage, the handling of the very plastic clays is made much easier during the wet winters common to this district.

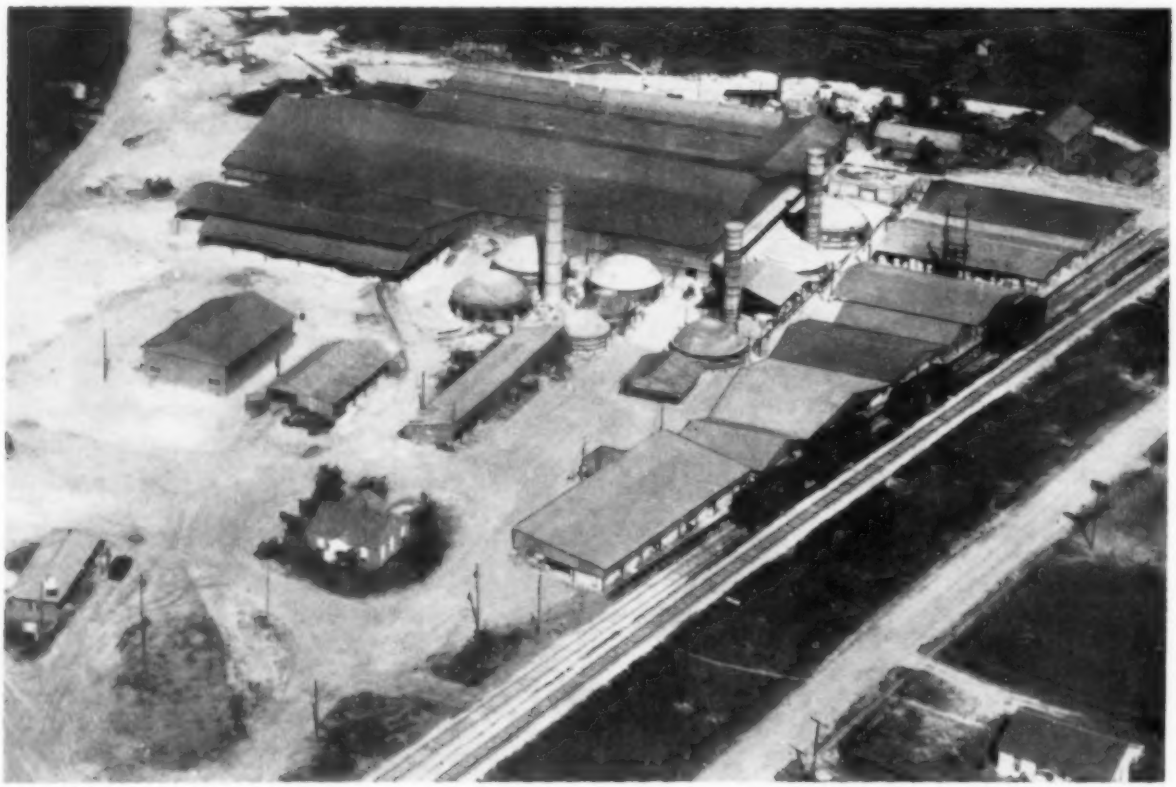
Producing only fire clay refractories, this plant makes both medium and high duty products. Its special product is a snow white fire brick in great demand for use in household fireplaces throughout the region.

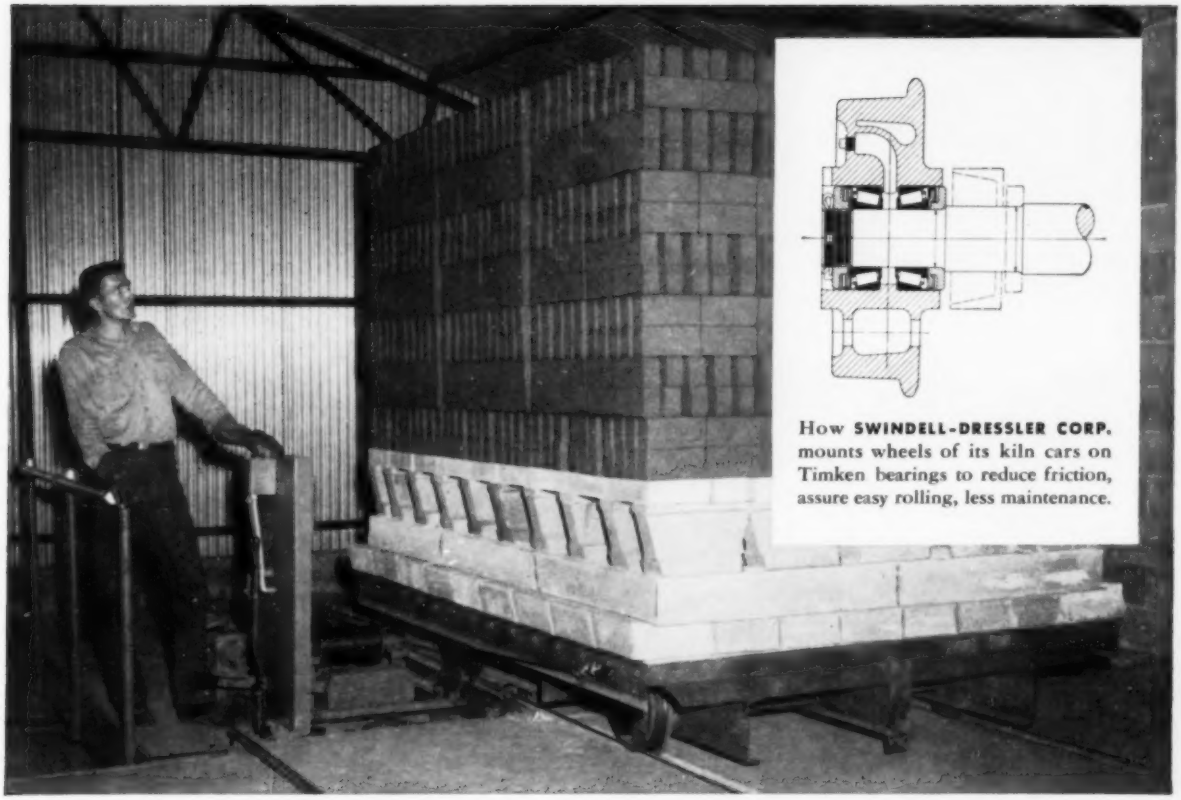
Four types of processing are used to produce a complete line of shapes. Dry pressing, the most important from the standpoint of tonnage, is the mainstay but a repress line is operated to make quantities of repressed brick and a certain amount of large shapes are made by the air hammer and the wood mold processes.

Updating of blending and batching equipment was required to take advantage of the natural qualities of the raw materials.

Products from Sulphur Springs Plant

Fire clay brick, refractory specialties, mortars, plastics, castables, gunning, refractories—industrial insulations, grogs and fire clay.





How **SWINDELL-DRESSLER CORP.** mounts wheels of its kiln cars on Timken bearings to reduce friction, assure easy rolling, less maintenance.

Now, one man can roll a kiln car with wheels on Timken® bearings!

WHAT used to be a tough job for eight men is *now easy* for one—moving a fully loaded, 30,000 lb. kiln car. And doing it without pinch bars. That's because the car wheels, on the Swindell-Dressler Corp. car above, are mounted on Timken® tapered roller bearings. Swindell-Dressler's new kiln design provides precise heat control, keeping temperatures at the wheels below the critical range for efficient bearing operation. What's more, wheel lubrication is cut from once every pass through the kiln to only once every few months. It's no wonder Swindell-Dressler switched to Timken bearings on kiln car wheels. And easy to see why one kiln operator says, "they're the biggest advance in kiln cars in 15 years".

It's because Timken bearings . . . *1) Roll practically friction-free.* They're geometrically designed and precision-manufactured to roll true. They reduce starting friction, roll smoothly. They maintain their precision longer.

2) *Save lubricant and maintenance time,* because they make closures more effective in keeping lubricant in, dirt and dust out. Your maintenance costs *stay* down.

You can be sure of getting more for your money when you build or buy machines equipped with Timken tapered roller bearings. One reason is: Timken Company leadership in tapered roller bearing design. Another is the service you get from graduate Timken Company *engineer* salesmen—service you can't get anywhere else.

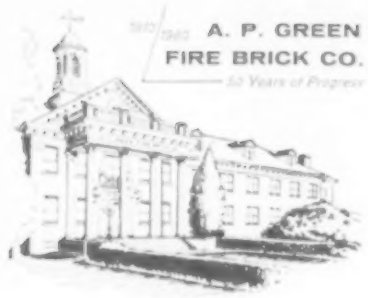
To be sure of better performance in the machines you build or buy, be sure they're equipped with Timken tapered roller bearings. ***When you buy Timken bearings you get . . .*** *1) Quality you can take for granted. 2) Service you can't get anywhere else. 3) The best-known name in bearings. 4) The pace setter in lower bearing costs.* The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.* Canadian Division: Canadian Timken, St. Thomas, Ontario.

Industry rolls on

TIMKEN®

tapered roller bearings

Circle Service No. 49



Three Canadian Plants Round Out Northern Production

Manager—R. L. Welch

Moose Jaw Plant operates under extreme weather conditions

Largest of the Canadian plants is A. P. Green Fire Brick Co., Ltd's. plant at Claybank, Saskatchewan. Its companion plants are at Toronto (Weston) and Acton, Ontario. Built and operated to supply a vast area with a complete line of quality refractories, the three operations practically span the continent.

Same as Domestic Plants

A complete line of products are either produced at these plants or distributed from their strategic locations. While organized as Canadian companies, these plants, Green's outposts in the north, are operated and managed the same as the other domestic plants.

In addition to the usual line of fire clay refractories, crucibles and cupels, the Acton plant also produces essentials to the mining industry.

Products from Toronto plant

Firebrick, refractory specialties—mortars, plastics and castables—industrial insulations, grogs and fire clay.

Products from Acton Plant

Crucibles, cupels, fire clay brick, special refractory shapes and insulating firebrick

Products from Moose Jaw Plant

Fire clay brick, refractory specialties, grogs and fire clay.

CANADIAN SALES OFFICES

Toronto, Ontario, Calgary, Alberta, Edmonton, Alberta, Vancouver, B. C., Winnipeg, Manitoba, Moncton, N. B., St. John N. B., Halifax, N. S., Hamilton, Ontario, Ottawa, Ontario, Windsor, Ontario, Montreal, Quebec, Quebec City, Quebec, Regina, Saskatchewan.

Panorama view of new Tarentum basic plant.

Basic Refractories Made At Tarentum Plant

Manager—W. G. Maloney

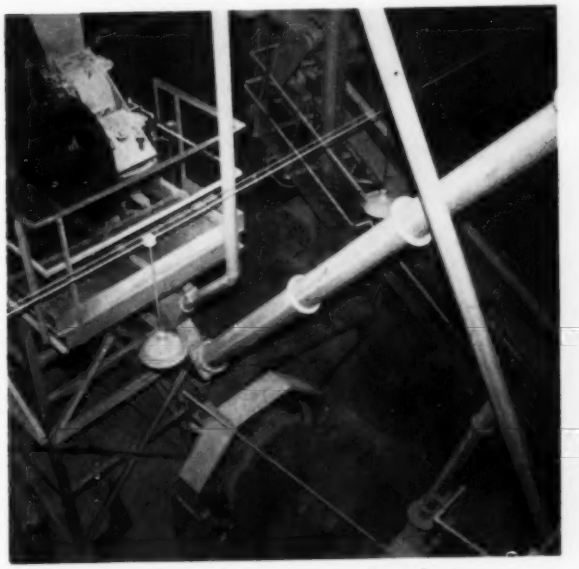
Early in 1959, the management of the Green Co. broke ground for a basic refractories plant in Tarentum, Pa. With basic products, the company now has a complete line of refractories.

The plant was planned as a very compact unit able to manufacture a maximum of products in a minimum of space with great efficiency. At the outset, two presses will make the brick and shapes and one short tunnel kiln will do the firing. The tunnel kiln is a flexible one which will fire products from 2300° F. to 3100° F.

Production began at a rate of 75 to 100 tons per day. By adding men and modest equipment, top production will be 300 tons per day.

A very complete line of basic refractories are being made, including fired and chemically bonded brick and shapes. The metal encased brick will be marketed under the name "*Green Clad*". They are made by an entirely new process—for which a patent has been applied for—developed by the Green Co. Cements, mortars, plastics, ramming mixes and castables will also be made at the plant.

The Tarentum plant was built at an investment of $2,500,000. This included the building and equipment. When demand exceeds production, it is planned to double output at the plant by investing an additional $500,000.



Looking down on grinding room where basic raw materials will be prepared.

A series of storage bins over batch collecting belts where various materials and grinds will be accumulated for measuring to formulae.

Years of Experience in Packing for Overseas Shipment Assure the Safe Arrival of A. P. Green Refractories Anywhere in the World
A P Green
REFRACTORY PRODUCTS

Paralleling the Green Company's expansion in the United States and Canada is its acquisitions of foreign manufacturing facilities. At the present time the Company owns or is affiliated with 11 producing plants located outside the North American Continent.

Foreign Exports and Manufacturing Is Big Business

A. D. Bond
Vice President
of Foreign Subsidiary
& Affiliates

A P. Green was the first refractory manufacturer to set up a department devoted exclusively to the processing of export orders. Today, in this department, located at the home office in Mexico, Missouri, experienced personnel handle the many complex details of consular and customs requirements, packaging, shipping, and documentation.

Representatives in about fifty countries and the city of New York . . . plus the headquarters group in Missouri . . . devote full time to export business. Personnel go to the four corners of the globe to gain new customers, service old customers, and check with sales representatives. The department serves customers in some sixty countries annually, shipping abroad from each of thirteen domestic plants and collaborating with factories in Canada, Mexico, Chile, Argentina, Uruguay, Brazil, England, and South Africa.

ARGENTINA

A. P. Green Argentina, S.A. was organized in 1935 as a subsidiary with its principal office in Buenos Aires. Fire clay, high alumina, and silica refractory products are produced from Argentine clays under technical direction of Green.

BRAZIL

A. P. Green do Brazil, S.A., organized in 1945, operates out of Sao Paulo with a sales office and warehouse in Rio de Janeiro. Two plants, located at Sao Jose dos Campos and Barro Branco, produce fire clay refractory products.

CHILE

Refractories "Lota-Green", S. A. was begun in 1953 at Santiago. This corporation operates three plants, manufacturing fire clay, silica, and high aluminm products under a technical service agreement.

ENGLAND

Liptak Limited with offices at London operates a plant at Manchester which produces Green specialties. The corporation was organized in 1924.

MEXICO

Cia. Mexicana de Refractarios, A. P. Green, S.A. is a Mexican corporation set up in 1944 in Mexico City. A plant in Mexico, D.F. produces refractory products under technical agreement. A subsidiary, Keramos, S.A., operates a plant at Monterrey, Cia. Mexicana de Refractories, A. P. Green distributes these products, together with the products of its subsidiary, Keramos, S.A., and certain other A. P. Green products throughout Mexico.

URUGUAY

A. P. Green—Comaco Refractarios, S.A., organized in 1945, is owned and operated under the technical direction of A. P. Green Argentina, S.A. It distributes refractories throughout Uruguay and operates a plant at Montevideo.

UNION OF SOUTH AFRICA

Vereeniging Brick and Tile Company Limited, located at Johannesburg, produces Green specialty products under a technical service arrangement.

These plants, located in seven different countries, supply most of their own domestic demand and ship to many other countries.

Suppliers to

A. P. Green Fire Brick Co.

United States and International Plants

Dump Bodies — Product
Hercules — Trade Name

Truck Equipment Company

511 N. Channing Avenue
St. Louis 3, Missouri
JEfferson 3-0932

Our company has furnished Dump Bodies, Power Take-offs and miscellaneous truck equipment to the A. P. Green Fire Brick Company for the past ten years.

Bearings — Product
Trade Name

R-J Bearings Corp.

2145 Hampton Ave.
St. Louis 10, Mo.
MI

1935-1960

For 25 years, a quarter century, we have had the privilege of furnishing bearings and bearing service to A. P. Green Fire Brick Co.

General Machine Work — Product
Trade Name

Meuwly Machine Works

1901 E. Fifteenth Street
Little Rock, Arkansas
FR 2-3221

It has been a pleasure to have furnished our services for maintenance to the A. P. Green Fire Brick Co. through their expanding years.

Lignin Liquor
Bentonite — Product
Glutin - Goulac
Volclay — Trade Name

St. Louis Coke & Foundry Supply Co.

1525 Sublette Avenue
St. Louis 10, Missouri
STerling 1-1400

St. Louis Coke has been serving the heavy clay, fire brick and foundry industry for 86 years. We represent leading manufacturers and are proud of our services and products.

Bucket Elevators
& Belt Conveyors — Product
Trade Name

American Iron-Steel Mfg. Company

5579 Manchester Avenue
St. Louis 10, Missouri
MIssion 5-5819

Our company has designed and furnished bulk material handling equipment and general steel fabrication to the Mexico, Missouri and Bauxite, Arkansas Plants of A. P. Green Fire Brick Co. for over 10 years.

Paper — Product
Trade Name

Shaughnessy—Kniep—Hawe Paper Co.

4316 Duncan Ave.
St. Louis 10, Missouri
JEfferson 3-2711

S-K-H Paper Co. of St. Louis, Mo., is proud to have supplied printing papers to A. P. Green Fire Brick Co. for over twenty years.

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318 Releesol
371 Belt Preserver — Product

Ensign Products Company

3528 East 76th Street
Cleveland 5, Ohio
Diamond 1-5911

For 15 years, Belts at the Mexico, Missouri plant have been maintained with 371 belt preserver. 318 Releesol—a penetrant—with excellent lubricating action is also in continued service.

Silk Screens G. W. Helbling & Sons, Inc. — Product
Trade Name

G. W. Helbling & Sons, Inc.

515 Market St.
St. Louis 1, Mo.
MAin 1-4566

Silk Screen Stencils for printing on containers, round or rectangular. Used on any material or surface, can reproduce anything on anything.

Commercial Printing — Product
Quality — Trade Name

H. S. Collins Printing Company

1531 Washington Avenue
Saint Louis 3, Missouri
Central 1-7540

PRODUCERS OF DISTINCTIVE
Booklets • Catalogs • Direct Mail
Folders • Manuals • Price Lists

A. P. Green Fire Brick Co. calls on Hundreds of Suppliers

A. P. Green Fire Brick Co. is a large purchaser of equipment, materials and services. Numbered among the suppliers are very large and well known concerns. They are the glamour suppliers who furnish the power shovels, the conveyors, kilns, mills, presses, etc.

But not all suppliers are glamorous, yet all are necessary to the proper conduct of the Green Co. business.

For instance, the office must be supplied with paper items, typewriters and calculating machines. The promotion department must buy paper, printing, artwork and all those detailed items needed to promote and sell the Green Co. products.

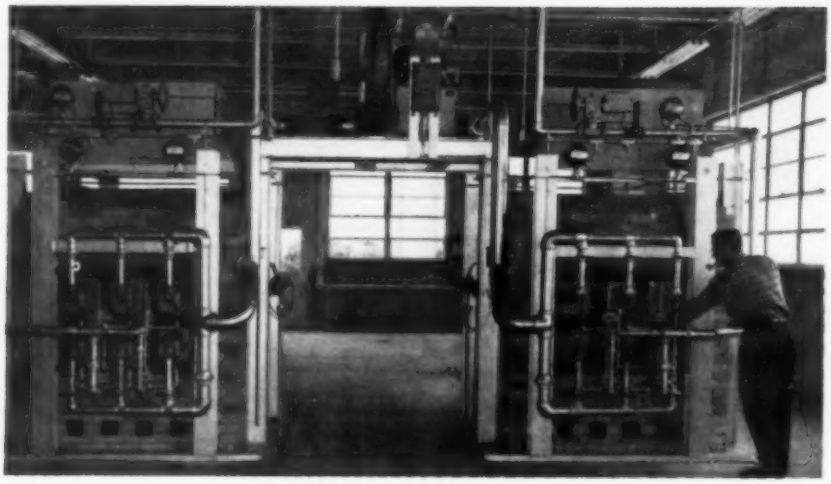
Back of every one of these so salled unglamorous items but very necessary ones is a supplier who helps the Green Co. click. The editors of Brick and Clay Record have sought out as many of these suppliers as possible and created this opportunity on this 50th Anniversary, for them to let it be known "I, too, helped the Green Co."

Bag Packaging Equip. — Product
Stoker Packers — Trade Name

H. L. Stoker Co.

111 So. College Ave.
Claremont, Calif.
NA. 6-1206

Our company has furnished packaging equipment to A. P. Green Fire Brick Co. and it's subsidiary companies for over ten years. Our congratulations for the splendid growth & developmnet they have enjoyed.



A battery of well-instrumented kilns fires experimental refractories.

Three Point Research Program Girds For Future

Richard S. Bradley, Vice Pres., Director of Research & Engineering

The Green Co. was one of the first in the refractory industry to recognize the importance and value of an organized research program. It has maintained one of the largest and most completely equipped laboratories in the industry since the middle '20's.

Prior to 1955 emphasis was concentrated on specialty refractories products, plus fire clay and high alumina brick. Since that time the Company has diversified its products and sales interests necessitating a greatly expanded research program. This includes work in basic, tar bonded dolomite, silica, sintered alumina, mullite, zircon and silicon carbide. It also includes contract work on ceramic fuels for the Atomic Energy Commission.

Five Year Program

The Company is embarked on a five year research and engineering expansion program which is nearing completion. When the program is completed this year, the research and engineering staff will be amost doubled, and a new $1,000,000 Research Center will be in full use.

Three Steps Listed

The research and engineering program includes: (1) testing, (2) product research, (3) basic applied research, (4) fundamental research, (5) industrial engineering, and (6) plant engineering.

The new research and engineering facilities are designed so that they can be easily expanded to accommodate future needs. The new Research Center includes the following units:

(1) 6,000 square feet of process and pilot plant facilities.

(2) 6,000 square feet of furnace testing facilities.

(3) 18,000 square feet occupied by offices, a library, conference room, and laboratories . . . including x-ray, microscope, chemical, electronic and physical.

Units One and Two of the new Research Center were completed in 1956 and 1957. The third unit is now nearing completion. The front of the new Research Center is of modern colonial design, complimenting the nationally known A. P. Green executive office building.

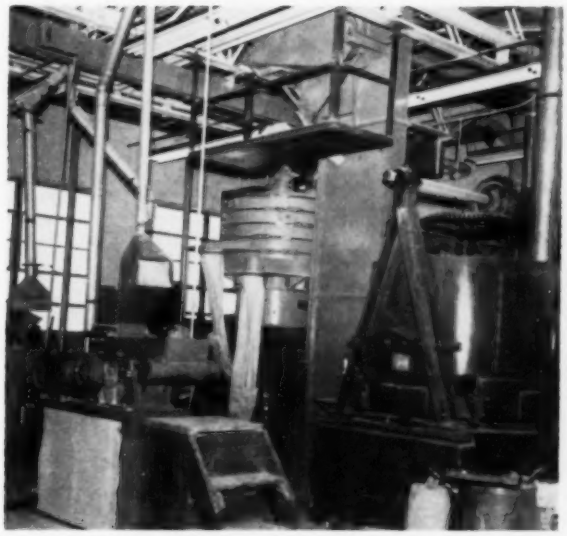
(*More Research Pictures on page 73*)

Structure for research is all metal and masonry.

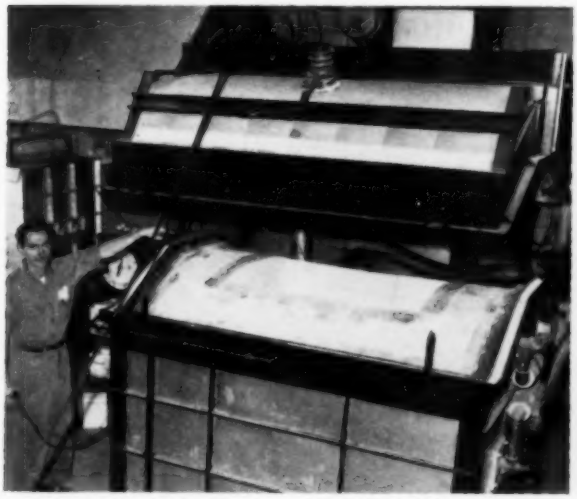
Instrumentation is very complete for detailed recording.

An experimental molding operation.

Hydraulic and mechanical presses for full scale brick.



Raw material batching equipment for large scale operation.



Bell-type kiln is also used.

Weighing batches for experimentation.

Sales—The Most Vital

J. Offutt,
Vice President
In Charge of Sales

There is a Green product specifically designed to fulfill every industrial refractories requirement. The distribution system composes a vast network of sales offices, distributors, and dealers strategically located to provide prompt delivery on every order.

Large warehouse stocks, plus the assistance of an engineering department experienced in the latest refractories developments, are the customer's assurance of the most advanced refractory service available.

Direct salesmen, subsidiaries, division sales organizations, distribu-

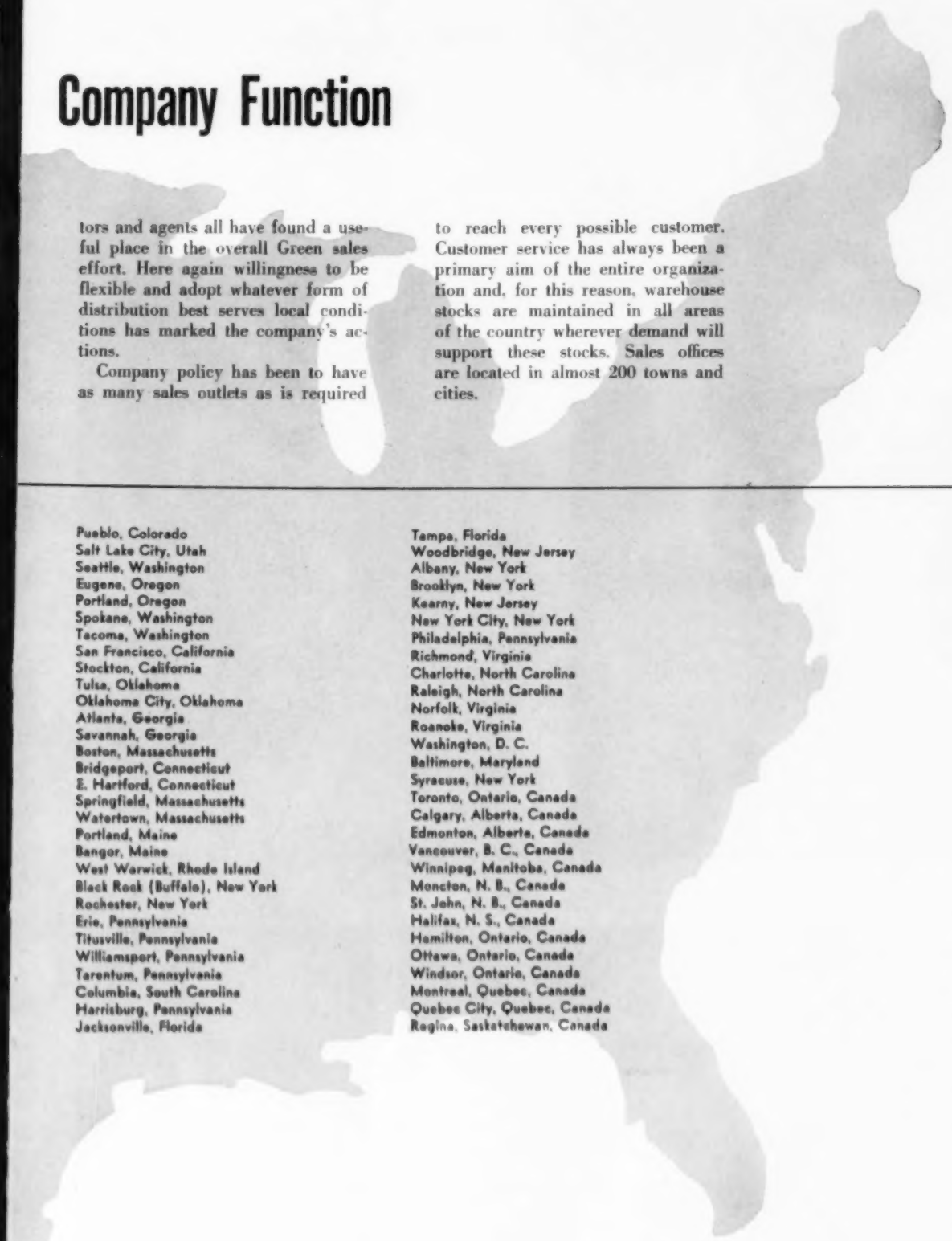
A. P. GREEN FIRE BRICK COMPANY
SALES OFFICES

Asheville, North Carolina
Chicago, Illinois
Chattanooga, Tennessee
Columbus, Ohio
Detroit, Michigan
Fort Wayne, Indiana
Canton, Ohio
Cleveland, Ohio
Dayton, Ohio
Elyria, Ohio
Lima, Ohio
Norwood (Cincinnati), Ohio
Sandusky, Ohio
Toledo, Ohio
Charleston, West Virginia
Grand Rapids, Michigan
Kalamazoo, Michigan
Lansing, Michigan
Muskegon Heights, Michigan
Saginaw, Michigan
Fort Wayne, Indiana
Evansville, Indiana
Indianapolis, Indiana
Louisville, Kentucky
Milwaukee, Wisconsin
Rockford, Illinois
Appleton, Wisconsin
Madison, Wisconsin
Marinette, Wisconsin
Racine, Wisconsin
Wausau, Wisconsin
Nashville, Tennessee
Pittsburgh, Pennsylvania
St. Louis, Missouri
Baton Rouge, Louisiana
New Orleans, Louisiana
Jackson, Mississippi
Birmingham, Alabama
Des Moines, Iowa
Houston, Texas
Shreveport, Louisiana
Adams (San Antonio), Texas
Beaumont, Texas
Dallas, Texas
El Paso, Texas
Fort Worth, Texas
Thermo (Sulphur Springs), Texas
Kansas City, Missouri
Springfield, Missouri
Los Angeles, California
Memphis, Tennessee
Minneapolis, Minnesota
Bismarck, North Dakota
Peoria, Illinois
Davenport, Iowa
Moline, Illinois
Omaha, Nebraska
Sioux City, Iowa

Company Function

tors and agents all have found a useful place in the overall Green sales effort. Here again willingness to be flexible and adopt whatever form of distribution best serves local conditions has marked the company's actions.

Company policy has been to have as many sales outlets as is required to reach every possible customer. Customer service has always been a primary aim of the entire organization and, for this reason, warehouse stocks are maintained in all areas of the country wherever demand will support these stocks. Sales offices are located in almost 200 towns and cities.



Pueblo, Colorado
Salt Lake City, Utah
Seattle, Washington
Eugene, Oregon
Portland, Oregon
Spokane, Washington
Tacoma, Washington
San Francisco, California
Stockton, California
Tulsa, Oklahoma
Oklahoma City, Oklahoma
Atlanta, Georgia
Savannah, Georgia
Boston, Massachusetts
Bridgeport, Connecticut
E. Hartford, Connecticut
Springfield, Massachusetts
Watertown, Massachusetts
Portland, Maine
Bangor, Maine
West Warwick, Rhode Island
Black Rock (Buffalo), New York
Rochester, New York
Erie, Pennsylvania
Titusville, Pennsylvania
Williamsport, Pennsylvania
Tarentum, Pennsylvania
Columbia, South Carolina
Harrisburg, Pennsylvania
Jacksonville, Florida
Tampa, Florida
Woodbridge, New Jersey
Albany, New York
Brooklyn, New York
Kearny, New Jersey
New York City, New York
Philadelphia, Pennsylvania
Richmond, Virginia
Charlotte, North Carolina
Raleigh, North Carolina
Norfolk, Virginia
Roanoke, Virginia
Washington, D. C.
Baltimore, Maryland
Syracuse, New York
Toronto, Ontario, Canada
Calgary, Alberta, Canada
Edmonton, Alberta, Canada
Vancouver, B. C., Canada
Winnipeg, Manitoba, Canada
Moncton, N. B., Canada
St. John, N. B., Canada
Halifax, N. S., Canada
Hamilton, Ontario, Canada
Ottawa, Ontario, Canada
Windsor, Ontario, Canada
Montreal, Quebec, Canada
Quebec City, Quebec, Canada
Regina, Saskatchewan, Canada

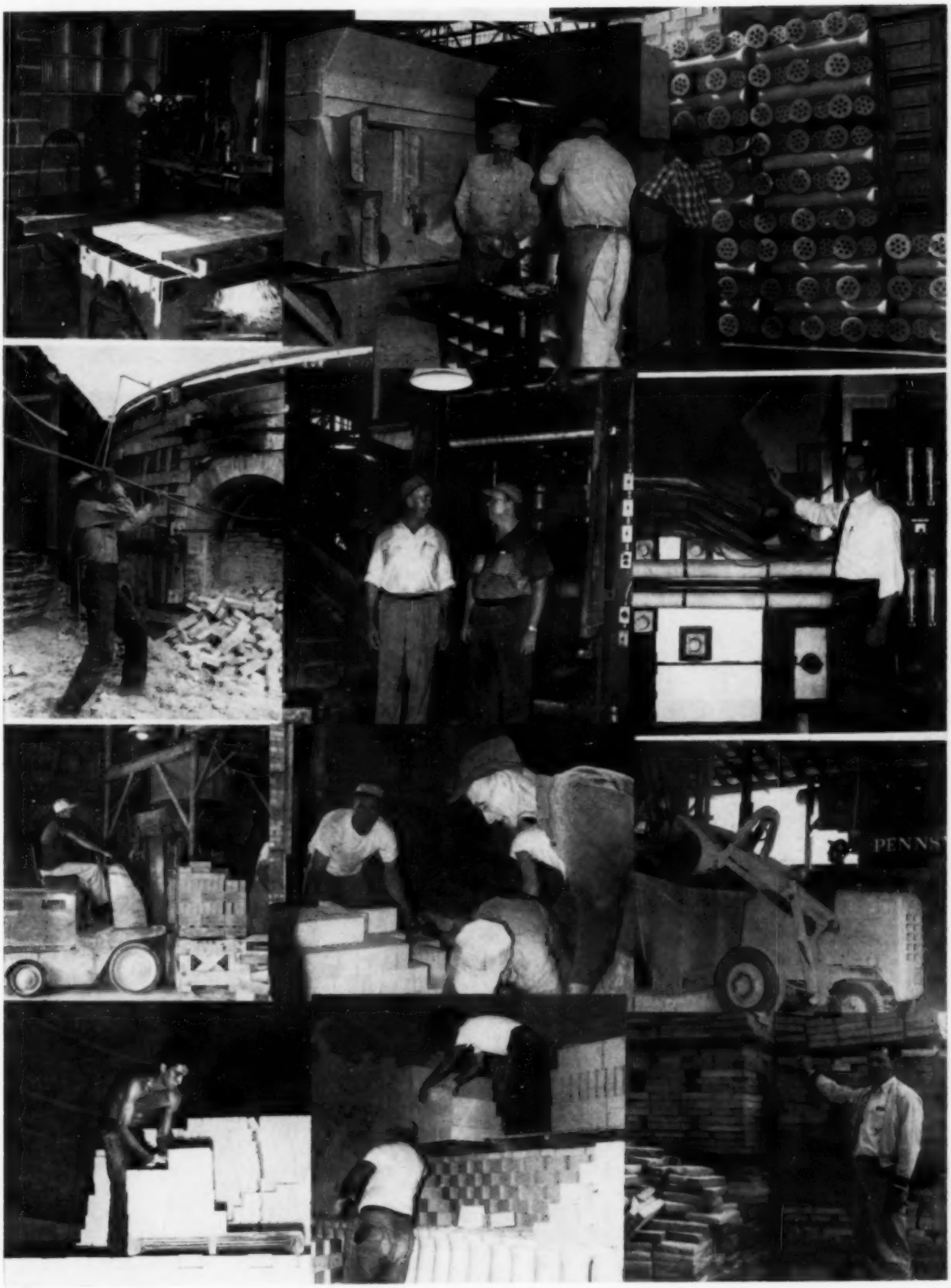
Green Is A Company Of People

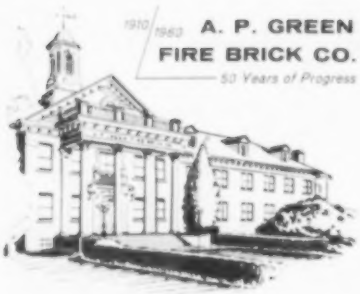
With the skills and aptitudes of over 2000 people, the Green Co. is able to manufacture its products and make its services available to the many industries that use refractories and other heat resisting products. Without the lift truck operator, without the hand presser, without the kiln fireman, without the foreman, there would be no refractories production—no Green Co.

It is with the deepest understanding that the directors and officers of the company recognize and respect the contributions of the people who make up A. P. Green—a company of people.

Here are but a few of THE PEOPLE.

Green is a Company of People . . .





Green Is A Team Of Executives —

Selected for their experience and ability, the executive staff members of A. P. Green Fire Brick Co. are outstanding. Most of them are veterans who came up through the ranks. These are men of stature who elected to make refractories their life's work. Together they are the team which is spelling success for the Green Co.

William S. Lowe,
President

Company Officers

Arthur D. Bond,
Vice-President

Richard S. Bradley,
Vice-President

Arthur R. Barnett,
Vice-President

Neal S. Wood, Vice-President
& Ass't Secretary

Lester J. Miller,
Executive Vice-President

Charles C. Morley,
Treasurer & Ass't Secretary

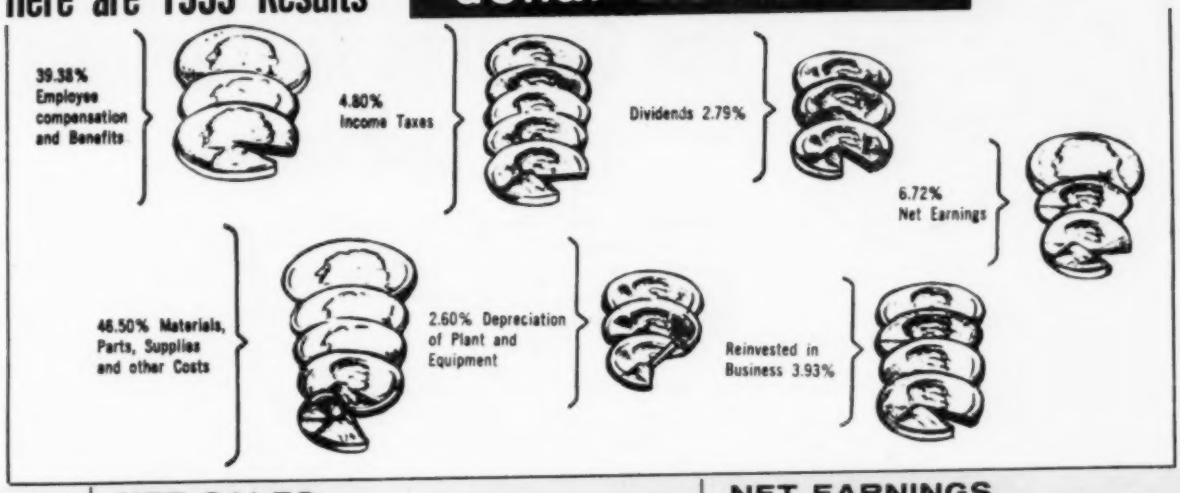
George R. Sullivan,
Vice-President

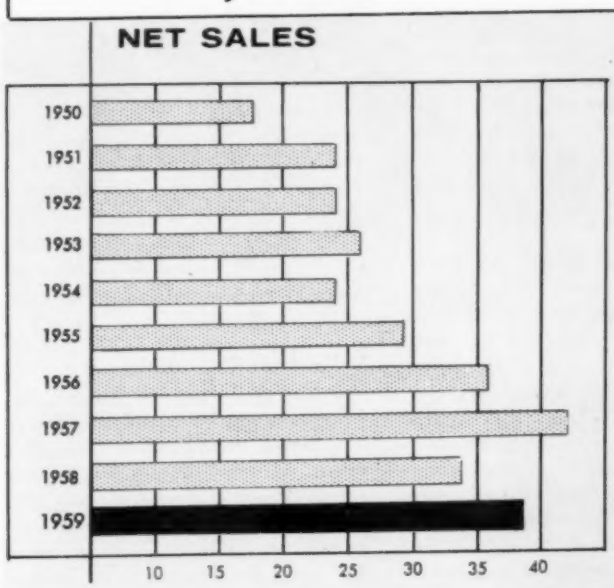
J. James Offutt,
Vice-President

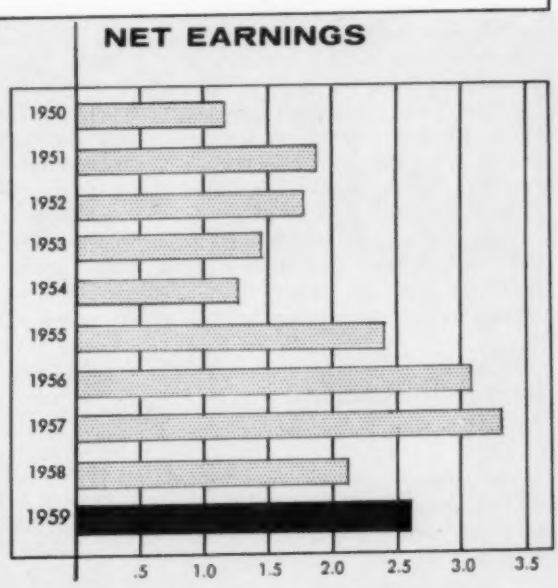
Walter G. Staley, Vice-President,
Secretary & Ass't Treasurer

Here are 1959 Results

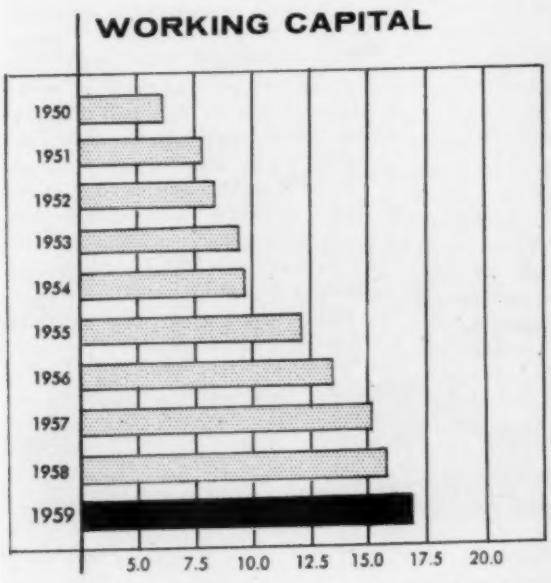
dollar distribution

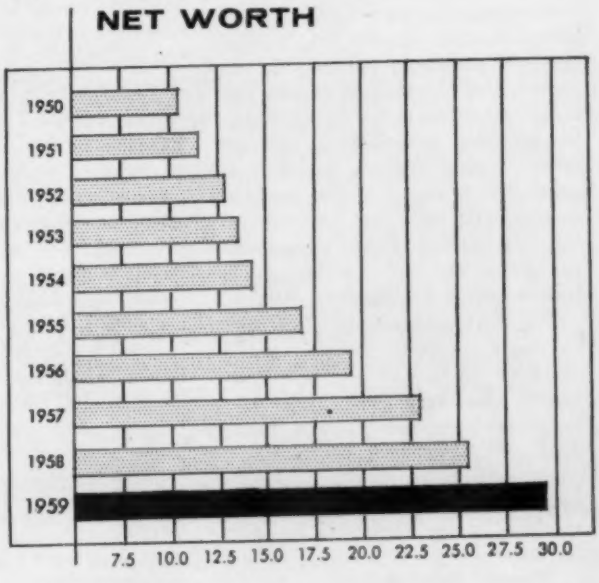

39.38% Employee compensation and Benefits
4.80% Income Taxes
Dividends 2.79%
6.72% Net Earnings
46.50% Materials, Parts, Supplies and other Costs
2.60% Depreciation of Plant and Equipment
Reinvested in Business 3.93%





MILLIONS OF DOLLARS





MILLIONS OF DOLLARS

How Operations Are Controlled And Coordinated

Combining rapid growth over a worldwide plant location, no doubt presented complicated problems in standardizing quality, sales procedure, personnel and operations control. To get a clearer picture of 'how this was accomplished', Mr. Lowe was asked to present his version of the solutions to these problems.

There are many corporations in the United States which have learned to operate very effectively and efficiently as multiplant organizations. In fact, with the problems associated with large cities and concentration of population, there has been quite a move to decentralize companies, so much so that putting smaller or branch plants in rural communities has become the accepted practice. Therefore, there certainly would be nothing new or startling in the fact that the A.P. Green Fire Brick Company has gradually shifted from a single plant operation to a multiplant unit.

Render Better Service

There is plenty of evidence to indicate in our type of industry that manufacturing plants located in the various clay producing areas are able to render better service more economically to their customers. Thus the physical coordination, such as pricing of quotations, receiving of orders and scheduling plant production, falls into orthodox, well proven routines. As would normally be expected, each plant manufacturers material best suited to the raw materials in that area, as well as to the customers' needs. When a national organization is keyed to the needs of international customers and this, in turn, is coupled with foreign-based companies, the situation becomes a little more complicated.

The Green Company, of course, has certain specific policies, nearly all of which came into being as a result of some need. Many policies as they relate to pension plans, insurance programs, fringe benefits et cetera, are quite specific, carefully established, written down and made available to the employees in booklet form.

Whereas these definitions of relationship between people within a company are extremely important, must be defined and fully understood, they perhaps are over-shadowed in some degree by other policies relating to people. Some people not intimately acquainted with management practices might feel that a company policy is an over-all rule dreamed up by some extremely experienced and intelligent person which is written down and thereby becomes a law.

You have, no doubt, heard the question when a particular problem has arisen, "What have we done in the past in such cases?" In other words, no policy comes into being until we review past practices under the same conditions. Some companies, instead of having a policy manual, refer to their regulations as Plant Practices or Company Practices Manual. Therefore, this suggests the difficulty in defining or determining policies, keeping in mind that conditions are continually changing and policies must be adjusted and changed to meet these conditions.

Decentralized Management

Our company has developed the practice of decentralized management: that is, the passing on to segregated units considerable responsibility and authority for the management of those units. We try to develop budgets, profit and loss statements and balance sheets wherever possible for each separated activity, thereby giving the person responsible for that particular unit full knowledge of how well the unit performs and how he performed his own job. To some degree this may complicate the accounting routines and it may be observed that it points the finger for performance.

It has been our experience that good men like to know how well they are doing even if the information is not particularly complimentary. Most people improve in accordance with the guidance, constructive criticism and leadership exhibited by their supervisors. If a series of reports can be devised wherein standards of performance are set by people themselves, they are nearly always quite willing to be judged in accordance with these standards. Therefore, we attempt to set up standards of performance or budgets on as decentralized basis as possible. This perhaps defines our over-all policy concerning performance.

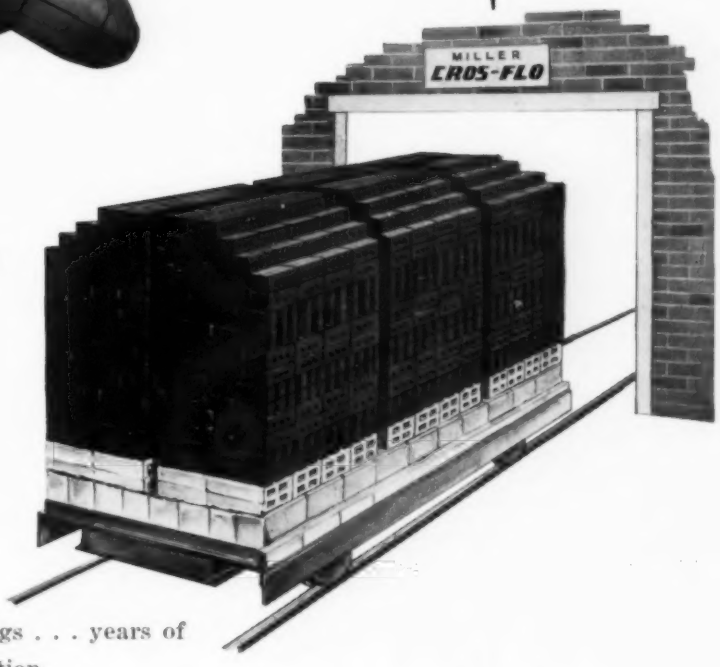
Long Distance Away

In the growth of the Green Company, since many producing units are located some distance from Missouri, there has been quite a need for movement of people from various locations. Also in the growth and integration of the company, we have had great demand for more mature judgment and development in management skills than were previously needed from a centralized location. Many companies today have been confronted with the problem of developing people. Not only must we continually train sales personnel, but also we must give increasing thought to skills in the science of management. We have all learned by this time that good management is the science of getting things done through people, or putting it another way, of getting others to do what you want them to do willingly.

We try to take advantage of training courses within the company and also make extensive use of the many professional training courses which are available to all companies. Some of these courses require employees to be absent from their jobs for a few days or for a few weeks. This repre-

Continued on page 101

Give Miller The Specifications And They'll Match 'em!



Miller Built Kiln Cars Meet Your Specifications

Whatever your kiln car needs . . . regardless of who built your tunnel kiln . . . Miller can furnish kiln cars and dryer cars to meet your exact needs and specifications.

Miller-built Kiln Cars have Timken Tapered Roller Bearings . . . years of smooth anti-friction operation.

Have Miller engineers analyze your kiln car needs . . . complete information and prices submitted without obligation.

LOOK TO MILLER FOR THE FINEST

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Pacific Agent:
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5028 Alhambra Avenue
Los Angeles 32, California

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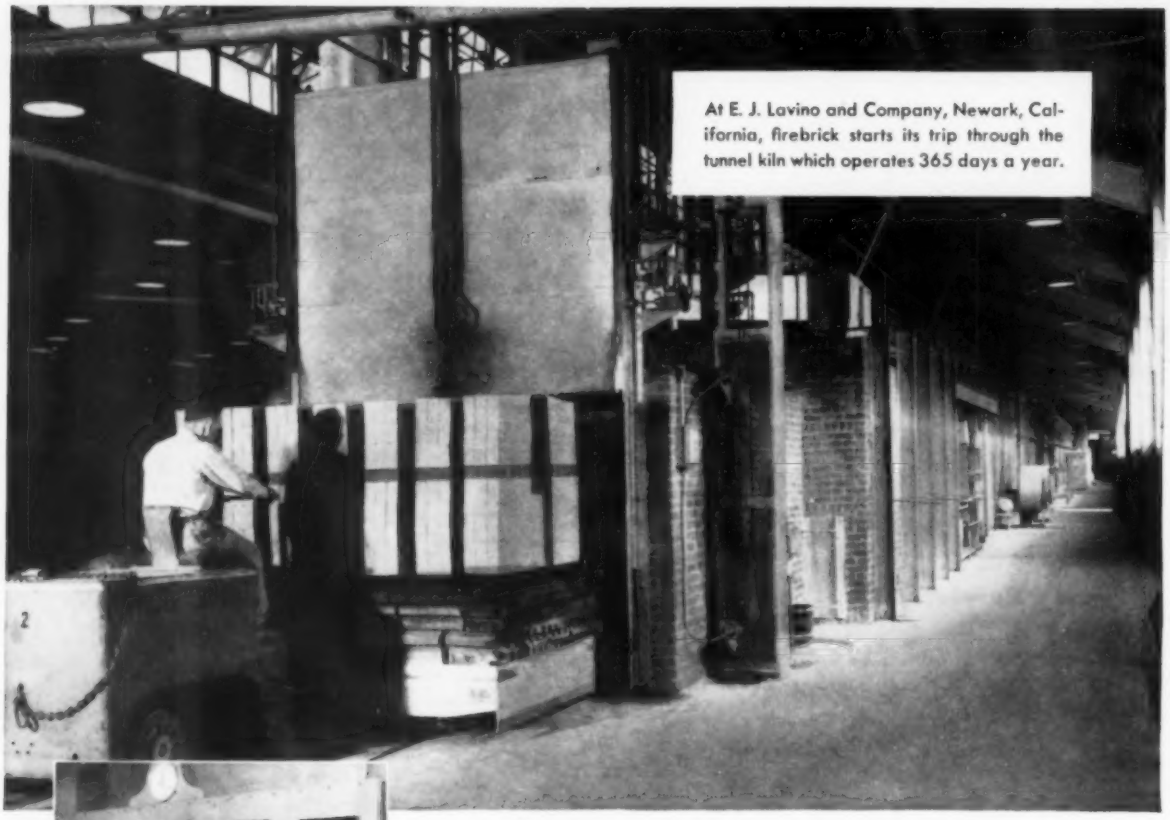

At E. J. Lavino and Company, Newark, California, firebrick starts its trip through the tunnel kiln which operates 365 days a year.

Honeywell instruments indicate and control kiln temperature, measure fuel flow, measure and control kiln pressure. These controls require a minimum of maintenance, as E. J. Lavino and Company learned by experience with them in all its plants.

Honeywell controls assure continuous high-quality firebrick production

at E. J. LAVINO and Company

Continuous tunnel kilns operate most efficiently and profitably with automatic controls. They keep costs down, product quality uniform, and rejects at a minimum. Wherever kilns are operated by Honeywell controls—these are everyday benefits.

Let Honeywell design a complete, automatic control system for your kiln. Instruments and accessories can be furnished already mounted, with back-of-panel wiring and piping completed. You need only make connections to the measuring and control units and for compressed air and electricity. You can be certain of dependability, for the system will be *all* Honeywell, from thermocouples to panel to valves.

Get complete details from your nearby Honeywell field engineer. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

75th YEAR
PIONEERING THE FUTURE

Honeywell

H HONEYWELL *First in Control* SINCE 1885

Circle Service No. 104

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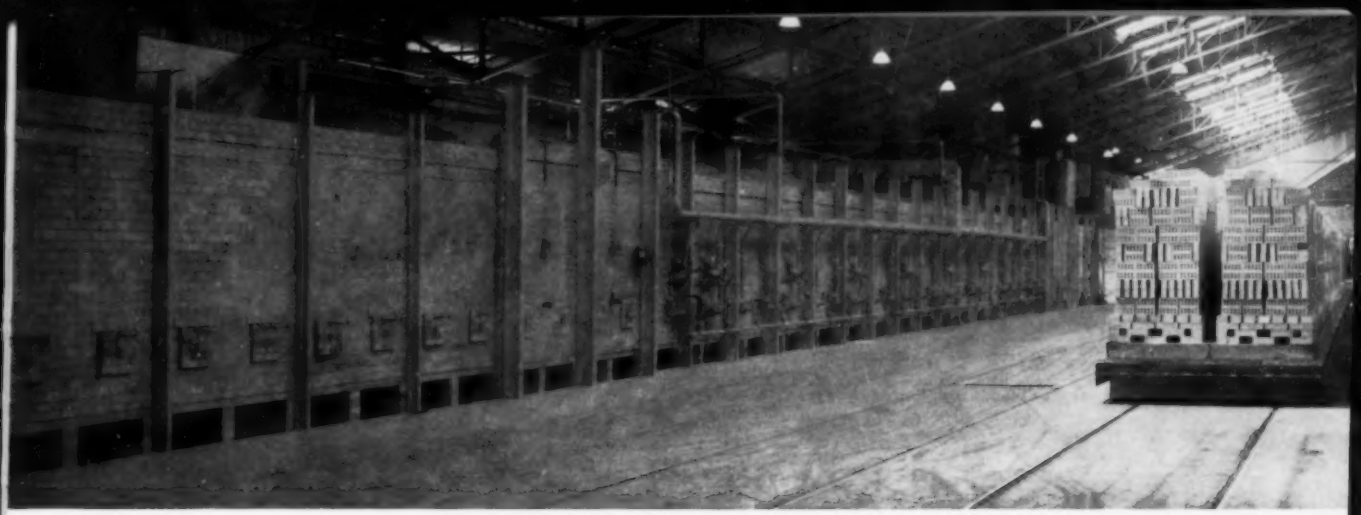


When you call in *specialists*...

... you get a ceramic plant designed for economical operation and quality product. Because ceramic plant specialists have the know-how and the proficiency to provide the complete, coordinated and mechanized plant package to manufacture your structural clay products from the receiving of your raw materials to the shipping floor of your finished product.

That is why it will pay you to consult engineers specializing in ceramic plant design and installation.

HENDRYX
CERAMIC PLANT DESIGN

DWIGHT B. HENDRYX AND ASSOCIATES
6621 Darlington Road
PITTSBURGH 17, PA.

Tunnel Kiln

(above) Hendryx-designed, 280 foot tunnel kiln with three separately controlled firing zones and quenching and annealing zones, for burning buff face brick. Waste heat is salvaged for use in dryers.

Manufacturing Unit

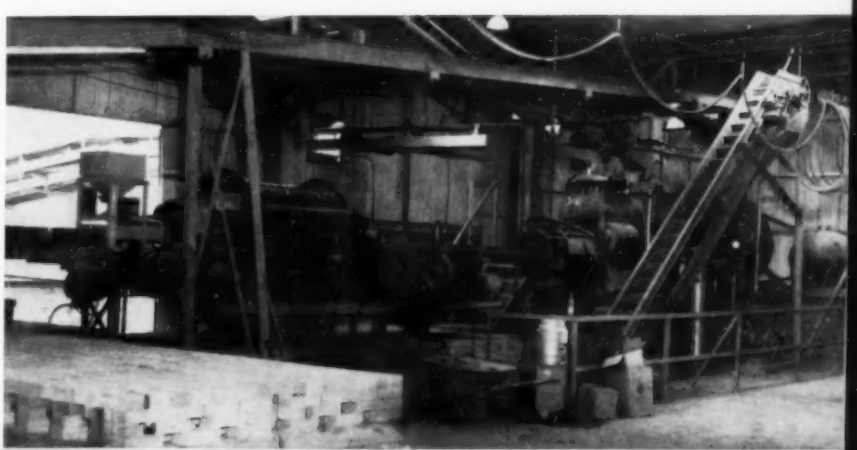
(right) This unit, serving a tunnel brick kiln, extrudes, molds and cuts in a compact and efficiently arranged area, economical of plant floor space.

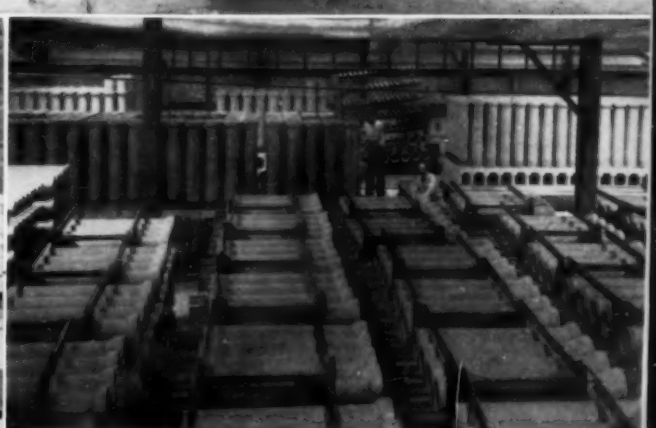
Setting Kiln Cars by "Lowervator"

(below) Platform is lowered at slow, adjustable speed for uniform level setting. Eliminates stooping and lifting, increases setting speed 50%, cuts setting tracks and labor cost 33%. Cars are moved on, off and along tracks automatically.

A Recently-built Plant

(lower right) Dryer racks of green sewer pipe in foreground; loaded kiln cars in background. Overhead are waste heat pipes from kiln to dryers.





Eliminate sagging kiln arches with refractory concrete

Kiln door and firebox arches constructed (or repaired) with refractory concrete will not sag or spall due to thermal shock . . . will stand up under kiln temperatures to 2600° F. This helps reduce shutdowns for repairs and maintenance and increases kiln output.

Installation is economical, too. Refractory concrete arches, made with LUMNITE calcium-aluminate cement and aggregates, can be cast in place or precast in any size or shape. No skilled labor is required and concrete will reach service strength in 24 hours.

Other uses of refractory concrete in brick and clay plants include door linings, flues, car tops, crown insulation. For convenience, castables containing LUMNITE cement are available from leading manufacturers of refractories. These are packaged mixtures, ready to use. Simply add water, mix and place. For more information, write Universal Atlas Cement, 100 Park Avenue, New York 17, N. Y.

Universal Atlas Cement
Division of
United States Steel

L-205

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Circle Service No. 52

American Nepheline opens new sales headquarters in the United States

"Lakefield" Nepheline Syenite Gets New Facilities for Sales, Technical Service and Research

Harold R. Deeth,
Vice Pres. — Marketing,
American Nepheline Ltd.,
American Nepheline Corp.

Lyle A. Holmes,
Manager U. S. Sales,
American Nepheline Corp.

Dr. C. J. Koenig,
Vice Pres. — Research,
Amer. Nepheline Corp.;
Director of Research,
Amer. Nepheline Ltd.

Dr. R. C. Wilson,
Technical Service
Representative,
American Nepheline Corp.,
American Nepheline Ltd.

Effective June 1st, 1960, all United States sales will be handled through a new wholly-owned subsidiary:

AMERICAN NEPHELINE CORP.

4720 KENNY ROAD
COLUMBUS 21, OHIO AM. 7-9422

All orders and enquiries should be directed to the above address.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

A TRIBUTE TO OUR PREVIOUS SALES AGENT — GREAT LAKES FOUNDRY SAND CO., DETROIT, MICH.

Our exclusive U. S. sales contract with the above company, which has been in effect since the start of our business in 1935, expires at the end of 1960. However, mutually satisfactory arrangements have been concluded whereby our new U. S. subsidiary will handle all U. S. sales matters commencing June 1st, 1960.

We wish to pay tribute to the officers and personnel of the Great Lakes Foundry Sand Company by whom we have been so ably represented in the United States. We are especially grateful to Mr. C. L. Cruikshank, Manager of the Ceramic Division, who has worked closely with us in pioneering the U. S. sales development of our material. We appreciate his helpfulness and cooperation in the past years, and also in connection with these new arrangements.

We are pleased to announce that Mr. C. L. Cruikshank will continue his association with us in a consulting capacity.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

AMERICAN NEPHELINE LTD.

TORONTO, ONTARIO, CANADA

Circle Service No. 53

Review and Forecast

How the Next

Shipments good and orders ahead of last year

Refractories shipment down with steel production

Refractory shipments down to about 70%

Aggregate demand is up over 1959

Shipments ahead of last year and orders too

Shipment good. Orders even to slightly better

Refractories shipments down with steel production

Refractories shipments slightly under 1959

Aggregate demand is even with 1959

Symbols:

CLAY PIPE

FIRE BRICK

AGGREGATE

Six Months Look to Clay Products

Aggregate demand high and growing

Aggregate demand falling—late start

Refractories shipments down with steel,
up with glass, ceramics

Late building season start cause shipments to drag.
Orders a bit slow. Prices competitive

Aggregate demand is down—late Spring start

Refractories shipment down with steel—up with glass

Aggregate demand better than 1959

Late building season start. Affected shipments and orders.
Business dragging below last year

Refractories shipments down

In a nationwide survey of the brick and tile, refractories, clay pipe and lightweight aggregate industries, the editors have gathered these facts about business for the remainder of 1960. In general, business will overcome the lag in the early part of the year and should wind up three to eight percent over 1959.

Rather than present elaborate explanations, the survey results are presented by areas and by products on the map. Location of predictions is accurately placed on the map. Each product is signified by a symbol: clay pipe, fire brick, and a pile of aggregate.

The forecast for the brick and tile industry was so uniform that a single statement will cover for the entire country.

The concensus was that due to severe weather conditions in the winter, particularly January, February and March, sales and shipments were averaging five per cent less than the same period in 1959. However, with the advent of warm weather, business has picked up again and most of the manufacturers feel that business will at least be equal to last year and possibly better.

TRI Welcomes Corhart, Shenango Companies

Spring Meeting Sees Arthur Re-Elected President

The Refractories Institute held its semi-annual meeting May 5 and 6 at The Homestead, Hot Springs, Va. with a near record attendance.

J. B. Arthur, Founder of Mexcio Refractories Co., wsa re-elected President. New refractory producer members include Corhart Refractories Co. and Shenango Refractories Co.

W. J. Kenney, General Counsel of The Institute, reviewed the current status of percentage depletion including especially, a summary of the Cannelton Sewer Pipe case now on appeal by the Government to the U. S. Supreme Court, with hearing scheduled for the week of May 16.

L. J. Trostel, Chairman of the Technical Advisory Committee, reported on research and specifications. He referred to the proffer of The Institute to carry out A.S.T.M. tests for agencies of the Federal Government. He said that the changing pattern of demands for refractories of various types may require reorientation of the research activities of the Fellowship; also that more rigid quality control is being demanded and the Fellowship can be of assistance in defining the limits of the precision of the tests employed. He reported on some phases of the work of Committee C-8 applying to specifications.

Revisions have been made in the specifications for incinerators and for fireclay base castables. A tentative classification for basic brick (except electric cast and fused magnesia) has been adopted. Four other classifications either in form or for study were proposed to C-8. He mentioned that a long time load test is being considered because of the higher temperatures being considered for blast furnace stoves; also a corrosion test for glass tank refractories.

S. M. Phelps, Director of the Refractories Fellowship at Mellon Institute, reported on activities there. He reported that the castable consistency meter and a special mixer which he devised have been developed to the point where final evaluation is to be made in plant laboratories. He mentioned, too, that the study of balling

W. S. Lowe, A. P. Green Fire Brick Co. and W. G. Young, Chicago Fire Brick Co.

W. J. Kenney TRI Gen. Counsel; J. B. Arthur, Mexico Ref. President of TRI and A. C. Newton, TRI Manager.

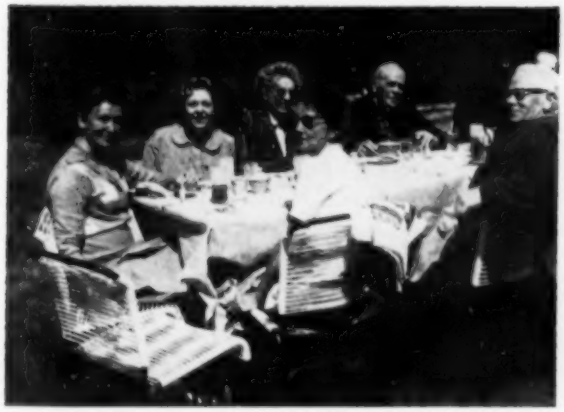
W. H. Peterson Jr., Valentine Firebrick Co. and E. E. Davis, Davis Fire Brick Co. These two men were the tallest and shortest at the meeting.

of fire clay mixes showed that this can be reduced with small quantities of additives and that lignin can be used in the same mix if desired. Proper procedure in their use is important, and a spray system was suggested as being the most effective. A bulletin will be issued shortly on the properties and use of sprays.

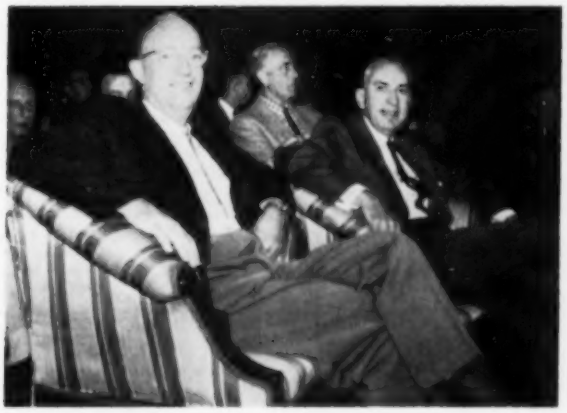
He also went into details on a method of measuring pressures at various parts of a brick during dry pressing. This is in relation to the Fellowship study of pressure cracking.

E. A. Garber, Harbison Walker; L. T. Greene, General Refractories and J.E. Brinkerhoff, Babcock & Wilcox.

R. F. Poole, Chisholm, Boyd & White; G. T. Needham, Oak Hill Foundry & Machine Works.

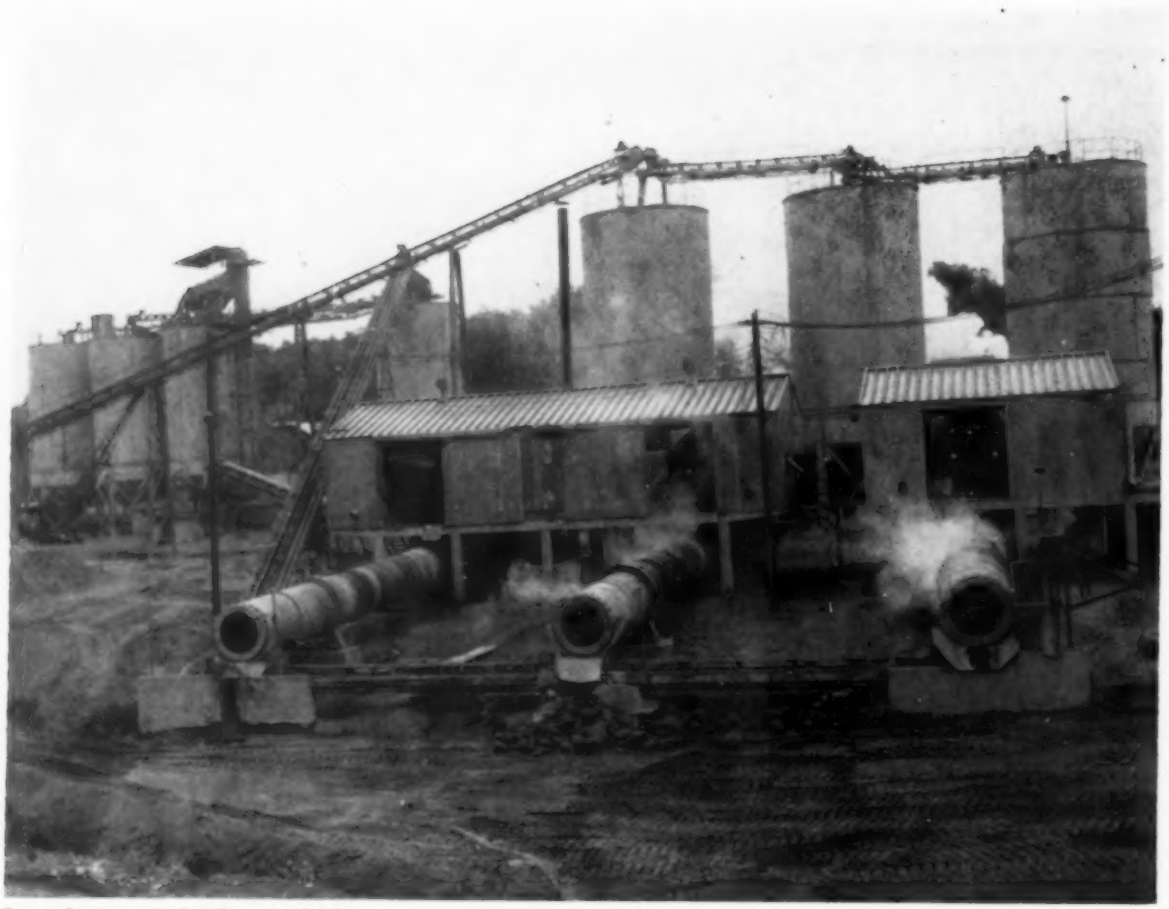


Luncheon respite from business meetings is enjoyed by this group.



Above—E. W. Valensi, North American Refrax; L. S. O'Bannan, Battelle Memorial Institute.

At left K. A. Rugh, Garfield Refr.; W. A. Porter, Globe Refr.; G. Dixon and C. B. Kay, Kyanite Mining; and D. R. Smith, Ironton Fire Brick Co.



General view of the Georgia Lightweight Aggregate Company.

Sole Georgia Aggregate Producer Running Full Blast to Meet Increased Demand

By Neal F. Mohler,
Technical Editor

In a recent series of lightweight aggregate stories published by BRICK & CLAY RECORD, the editors visited all the member plants of the Expanded Clay and Shale Association, manufacturers who produce aggregate with the sinter belt machine. This article on Georgia Lightweight Aggregate Co. is the first of a series on lightweight aggregate producers who manufacture aggregate with rotary kilns, and who are members of the Expanded Shale, Clay and Slate Institute.

Demand for Lightweight aggregate in Georgia is keeping the state's only producer working around the clock trying to keep pace with the demands. The Georgia Lightweight Aggregate Company, located in Rockmart, Georgia, 46 miles northwest of Atlanta, is currently utilizing three rotary kilns in its operation, producing lightweight aggregate from a deposit of blue slate, which provides the company with enough raw material for full scale operations for more than 50 years.

The original plant, built in 1953, and added on to, as the years went by, is located on the Seaboard Airline Railroad in a narrow valley formed by low hills on two sides, the hills being composed of the blue slate. The plant is thoroughly modern in every respect and exemplifies advisable foresight and planning in efficient methods of crushing, burning,

A 2 yard Lorain shovel loads raw shale onto a Euclid truck

Hot clinker from the kilns are cooled in the 6 ft. diameter rotary coolers.

cooling, storing, and in the methods of material handling and all phases of the operation.

In 1956, under the direction of Otto C. Frei, company president, the company expanded its original operations to include the third rotary kiln. Original layout of the plant was such, and remained so, that additional expansion can be made when business conditions warrent. Frei personally designed the plant and facilities, the fifth such installation he has comandeered, and in it he has crystalized his thinking with the desire to attain the ultimate in high productivity, low operating costs, and a consistently high quality product.

The present productive capacity of burning and cooling facilities is approximately 900 cubic yards of expanded shale aggregate every 24 hours. The product is marketed under the trade name "Galite". Crushing, screening, and conveying equipment is, however, designed for the handling of 1800 cubic yards per 24 hours in order to permit future installation of additional rotary kilns and coolers.

Raw Material Preparation

The raw slate lies in massive, heavy deposits in the hills surrounding the processing plant. Procurement of the raw slate begins with stripping the top soil and oxidized material from the surface of the deposits, using a 2-yard Lorain deisel shovel for this work. The overburden is dumped into a valley on the side of the hill away from the plant. When the blue slate is uncovered, it is quarried in the conventional fashion by blasting and then loading the broken rock into Euclid dump trucks which carry the rock to the raw crushing plant. The haul from the faces of the quarry to the primary crusher is about 900 feet and down grade in favor of the load.

The primary crusher is a Telsmith 25 x 36 jaw crusher, fed by a Telsmith heavy duty apron feeder. Reduced to a 5″ maximum size, the raw slate is carried by a belt conveyor to a 5′ x 12′ double deck Seco screen. All material in a $\frac{3}{8}$″ to 2″ size is discharged onto a 204 ft. inclined belt conveyor which delivers the material to the raw storage silos. Any slate over 2 inches in size is carried back to the secondary crusher, a 24″ x 36″ double roll McLanahan-Stone crusher, which discharges back onto the primary belt conveyor.

At the present time, minus $\frac{3}{8}$″ slate is discharged from the screen to a 66 ft. stacker belt conveyor and is stockpiled for sale as a road aggregate locally. In the future this material will be used for expanded aggregate as other rotary kilns are added to the plant. The plus $\frac{3}{8}$″ material from the scalper screen goes up an inclined belt conveyor to a second Seco screen mounted over the 3 kiln feed silos. This is a totally enclosed, 4′ x 10′ unit, which splits the feed into a material less than 1″ size and material over 1″ size. The two sizes are emptied into separate raw ma-

The raw material is dumped into an apron feeder which feeds to the Telesmith primary crusher.

terials silo. Each of the three raw material silos is 55′ high and 22′ in diameter, holding about 625 cubic yards of material each. The base of each silo is an inverted cone with sloped sides 50° and are accordingly self-emptying. Each raw slate silo discharge is equipped with adjustable constant weighing feeders.

Beneath each raw material silo is an inclined 84′ kiln feed belt conveyor. While all other belt conveyors in the plant operate at conventional speeds of 250 to 300 ft. per minute, these three kiln feed belts are operated at the slow speed of 30 ft. a minute. This permits them to function both as feeders and conveyors for transferring the raw slate from the silos to the rotary kilns.

Three Rotary Kilns

Production from the aggregate plant centers around the use of three 8 ft. x 125 ft. Allis Chalmers rotary kilns, fired with natural gas. The kilns are installed with a pitch of ½″ per ft. and are rotated at 1½ rpm. Each kiln is equipped with combination type Hauck burners which are capable of switching from the natural gas fuel to Bunker C oil in a matter of minutes. This provision is for the purpose of utilizing fuel oil in the event of temporary interruption of natural gas delivery.

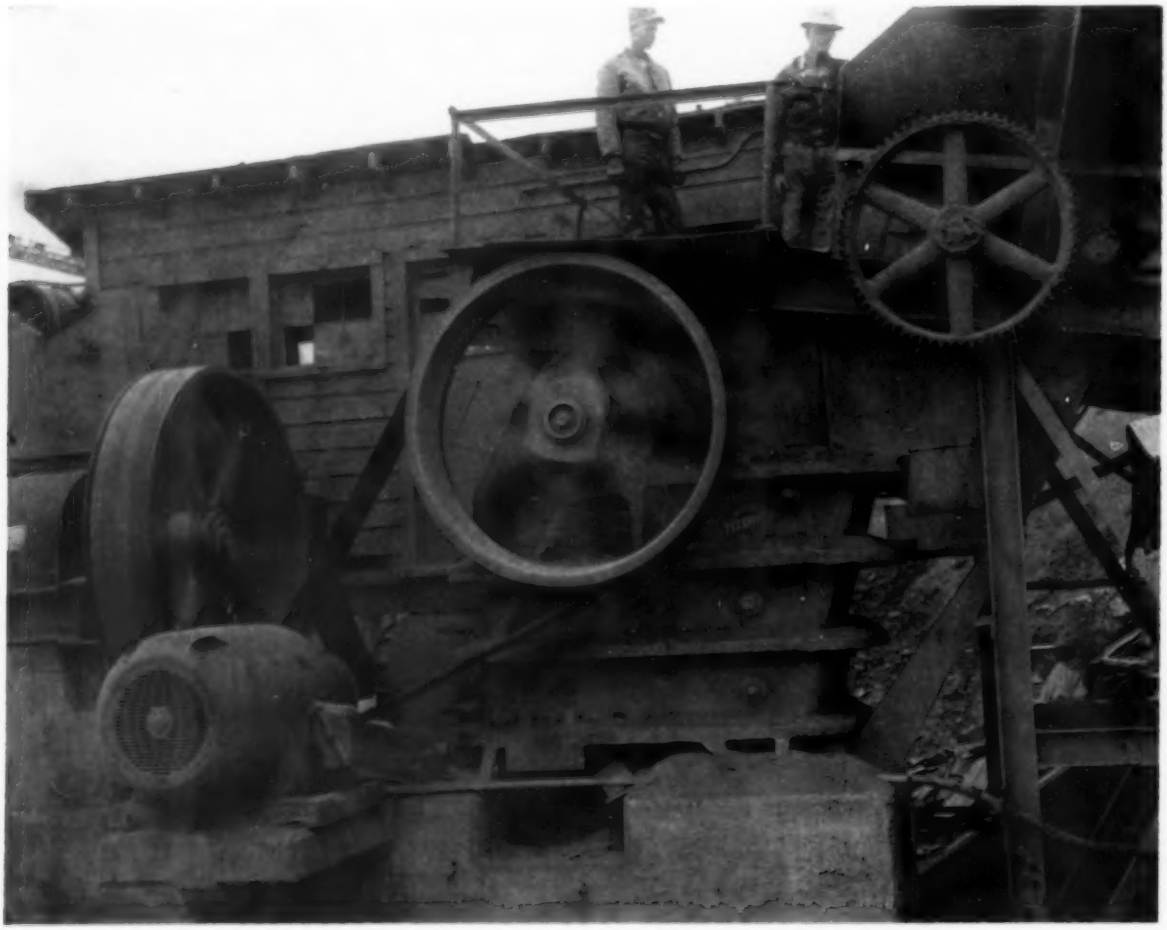
The three Allis-Chalmers rotary kilns are supported on three heavy concrete foundations, each kiln being provided with an auxiliary gasoline engine to drive the units should the purchased electric power fail. The first 35 feet of the kiln lining is with 60% alumina brick with the balance of the kiln using 40% alumina brick. The btu per cubic yard of burned material averages about 2,000,000. It requires about 55 minutes for the feed to discharge at the hot end. Each kiln has a capacity of about 300 cubic yards per 24 hours.

The kiln department includes an unusual operating feature in that the plant's central electrical switch panel is located in the burning control room, where kiln operators are present at all times. Any department of the plant can be shut down immediately from this point in event of emergency, and all conveyors and other items of equipment are electrically interlocked with Push button controls for proper sequential starting and stopping.

At the high end of the kilns, where the slate is introduced, an operating temperature of 600°F. is maintained. As the material moves down the kiln, moisture and organic material are vaporized with actual bloating being accomplished in the hot zone at temperatures around 2100°F. At this operating temperature, the material is a semi-molten plastic mass and which remaining volatile constituents in the

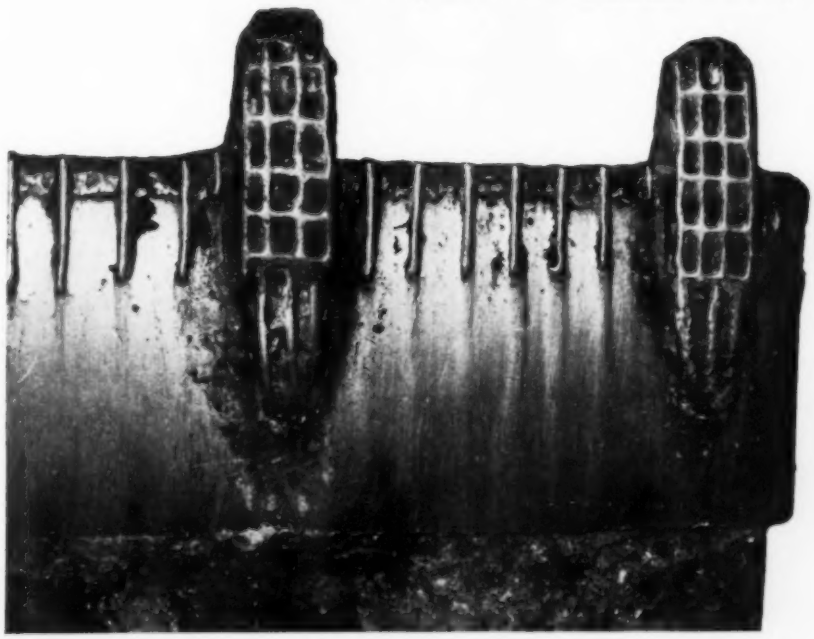
Continued on page 96

The Telsmith primary crusher reduces the raw shale to 5″ size and smaller.



A few passes of STOODY BOROD...

and you can forget Scoop Wear!



The scoop in the photographs above has been in constant use for 18 months without further attention. Note at left amount of hard-facing material still remaining from first application.

Scoop lips and teeth are natural targets for abrasive wear. The scuffing over hard surfaces picking up load after load of earth, sand, clay and other abrasive materials eats away edges, dulls both the lip and the teeth.

Teeth, lips and under edge of blade hold size and sharpness much longer when protected with a few stringers of Stoody BOROD. Beads can be applied during odd moments and occasionally touched up to maintain the equipment—a minor maintenance procedure that pays off big dividends in increased equipment life and efficiency.

APPLICATION DATA

Apply single stringers of Borod on top sides of teeth and scoop bucket lips. Make a continuous pass along under edge of lip and add stringers at right angles extending back 2 to 3". A cross-hatch pattern on under side of teeth adds protection in cases of severe abrasion. Greater wear resistance is obtained from oxy-acetylene applications but electric arc can also be used.

STOODY COMPANY

11950 East Slauson Avenue • Whittier, California

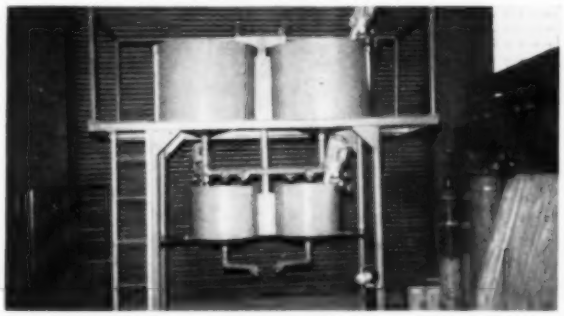
Circle Service No. 55

STAR Foundry & Machine Co., Inc.

NEW LEXINGTON, OHIO • PHONE FIreside 2-2377

★ ENGINEERS ★ DESIGNERS ★ BUILDERS ★

Engineering Service
Special Machines
Metal Fabrication
Sewer Pipe - Deairing Feeders
Transfer Cars
Electrified Vibrating Screens
Sewer Pipe Joint Molds & Equipment
Hydraulic Equipment
Gray Iron Castings
Car Moving Systems



SEWER PIPE JOINTING EQUIPMENT FOR SLIP SEAL OR POLYESTER JOINTS

Precasting Conveyor for 4" through 12" pipe—up to 2,200 4" or 6" pipe per shift; 1,500 8" pipe per shift. Productivity over stationary method up to 3 times the number of pipe per man hour.

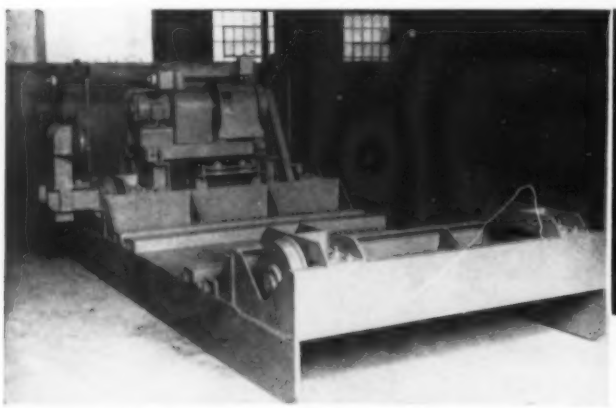
Polyester Conveyor for 4" through 12" pipe—1,000 8" pipe per shift typical capacity. Illustration above left shows 8"—4' pipe on conveyor.

Slip Seal Dies—4" through 36" sizes. Polyester Joint Dies 4" through 24". Dies per standard or special specifications.

Precasting Heating Vat—natural gas, L.P., or oil from 9 cu. ft. to 16 cu. ft. and 25 cu. ft. sizes. 16 cu. ft. size will deliver up to 4,500# properly heated asphalt per shift.

Polyester Batching System—complete with mixers, pump, and mixing gun. Tanks and piping arranged for ease of operation and cleaning. See illustration above right.

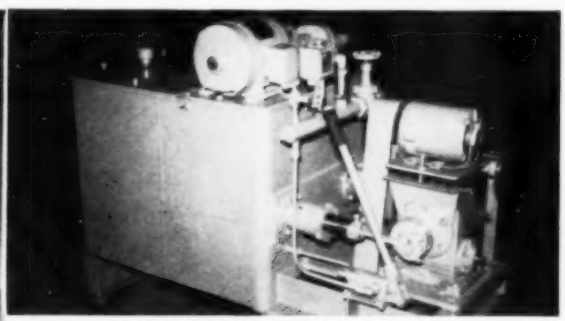
Miscellaneous accessories such as pipe racks, hoists, monorails, cranes, clamps, etc., are available for specific installations.



TRANSFER CARS

Star transfer cars are designed and built for hauling kiln cars weighing up to 75,000#. They are available in pitless or pit type models. The propel drive can be arranged for fluid coupling, hydraulic motor or D.C. motor components. For ease of kiln car handling, Star transfers can be furnished with winch and sheave assemblies, telescoping hydraulic car propellers or side cars.

Pitless transfer car with winch, folding outrigger sheave and fluid drive propel arrangement shown.



HYDRAULIC KILN PROPELLERS

Star hydraulic kiln propellers are custom designed for individual kiln installations. The Star hydraulic power unit combines the advantages of reciprocating and rotary pump units to make available an accurate and efficient car moving cycle. Manual or solenoid operated valving can be furnished for single acting and double acting hydraulic cylinder arrangements. Safetys, interlocks, and signals can be incorporated to suit customer's requirements.

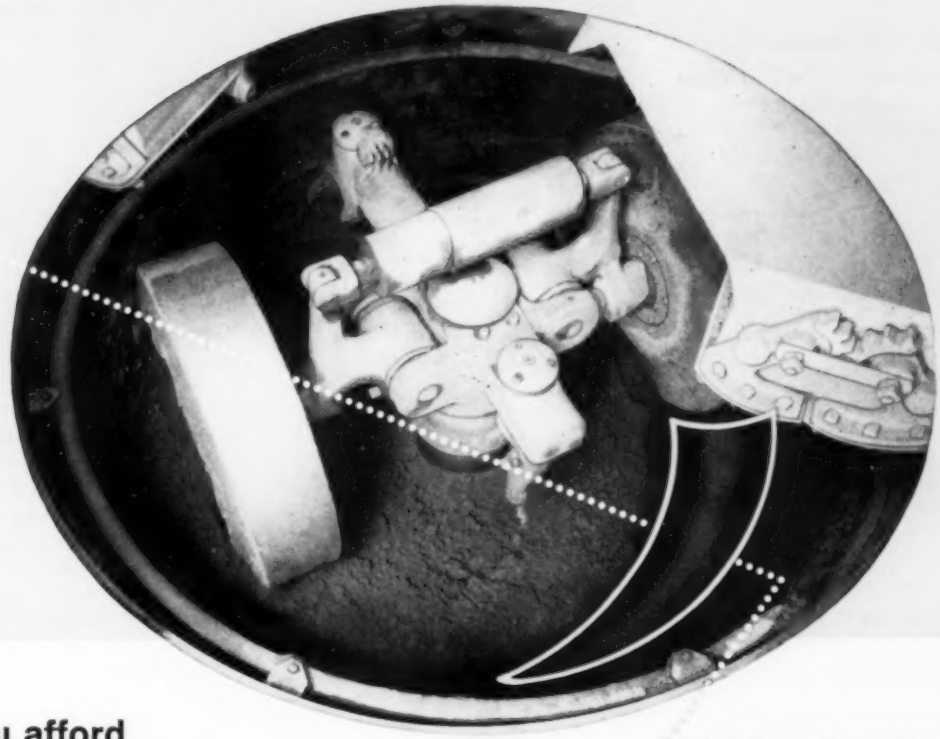
For further details, specific recommendations, quotations or discussion of equipment requirements, write or phone

STAR Foundry & Machine Co., Inc.
NEW LEXINGTON, OHIO • PHONE FIreside 2-2377

Circle Service No. 13

MIX-MULLER®

MEANS CONTROLLED DISPERSION FOR REFRACTORIES



P160

Can you afford to settle for less?

Any mixer can blend . . . but *few* mixers can provide the *intensive* mulling action necessary to evenly and thoroughly disperse moisture and binders for dry press refractories.

Now, more than ever before, refractory producers have come to realize that *controlled dispersion* in a Simpson Mix-Muller is paying increased dividends by providing maximum utilization of today's expensive raw materials.

If you're caught in the bind between maximum yield and soaring quality control standards . . . can *you* afford to settle for *less* than Controlled Dispersion?

SIMPSON *MIX-MULLER*® DIVISION

National Engineering Company
654 Machinery Hall Bldg. • Chicago, Illinois

3 way mulling action saves material, coats each grain

. . . KNEADING
Because the mullers never touch the wearplate, you get an intensive kneading of the muller against material grains—through a deep bed of material.

. . . SMEARING
The inside edges of the wheel have a shorter distance to travel than the outside edges to provide a smearing action—across the wide face of the mullers.

SPATULATE ACTION
...Note that mullers are set slightly off true radius so that as they roll they also skid sidewards to provide a spatulate action.

. . . THIS IS CONTROLLED DISPERSION

WRITE FOR HANDBOOK
—on mulling. 12-page bulletin explains controlled dispersion—gives details on 9 Mix-Muller models (¾ to 60 cu. ft. batch capacity).

Circle Service No. 54

Continued from page 92

slate expand as a gas and form the myriads of tiny air cells that give the material its lightweight properties. The finished material is a dark gray in color and compares very favorably with the various other lightweight materials manufactured in other areas.

Has Dust Collector

Each kiln is equipped with a Multiclone dust collector followed by individual spray towers. The multiclones discharge is through a motor driven rotary valve to a funneled outlet where it meets a tangential spray of water with the pulp flowing to a retaining pond. The recovered dust from the dust collectors is mostly a minus 50 micron product, and is practically all calcined shale. Each kiln has a Claridge exhaust fan to maintain proper draft conditions. Exhaust gases from the kiln are practically free from entrained solids, making the plant one of the cleanest in the industry.

General view of one of the 125 foot Allis-Chalmers kilns.

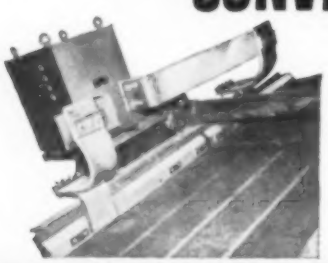
Hot clinkers from the kilns are discharged through the kiln firing hood directly into rotary coolers designed and fabricated to suit the particular needs of this operation. The three rotary coolers are 6 ft. in diameter and 70 ft. long and perform a multiple purpose. They are used primarily for cooling the expanded clinker from 2100°F to 125°F in a time period of about 20 minutes. They also function as a means of providing rapid dry cooling in order to control the crystallization of the hot material, and provide a means of recovering for kiln use the residual heat contained in the clinker as discharge from the kilns. All three coolers discharge the cool, expanded clinkers onto a cross belt conveyor. This conveyor in turn, discharges onto a inclined 258 ft. belt conveyor which carries the clinker to the clinker silo. A totally enclosed 4 ft. by 10 ft. Seco screen on top of the clinker silo is used to separate the $\frac{3}{4}$ to $\frac{3}{8}$ inch size from the cool clinker. This separated size is transferred directly to the number one Finish Silo which contains the material known as "straight coarse". At such times as this size is not required, the entire stream of cool clinker bypasses the screen and is discharged directly to the clinker silo.

The bottom cone of the clinker silo is equipped with a constant volume feeder which feeds the clinker into an inclined 75-ft. belt conveyor which in turn discharges into the primary finish crusher. The finish crusher is a Kennedy Van Saun No. 38½ fine reduction gyratory crusher which reduces the clinker to minus $\frac{3}{4}$ of an inch. The discharge from the primary crusher is screened, with oversize & undersize material fed to a Symons Cone Crusher. All crushed material is elevated to the top of the finish silos by totally enclosed Lippman bucket elevators. The eleva-

Continued on page 97

DO YOU STILL LET WET WEATHER FOUL UP YOUR SCREENING?

We unconditionally GUARANTEE *to solve your moisture problem right now with easy-to-install* CONVERTA-SCREEN



A FREE 30 DAY TRIAL will let you see the savings heated screens can make. Tell us what screening equipment you now have. We adapt CONVERTA-SCREEN for a month of service in your plant. For the full story of modern low-voltage heating with 5 basic betterments, write or call today.

SCREEN HEATING Transformers INCORPORATED

P. O. BOX 283 • MASSILLON, OHIO • Phone TE 3-8624

Circle Service No. 56

Continued from page 96

tor discharges through a chute onto a totally enclosed 5-ft. x 12-ft. triple deck screen which separates the crushed material into the required sizes.

Any aggregate larger than ¾ of an inch is returned to the clinker silo by a belt conveyor for additional crushing. The ¾" to ⅜" size aggregate is discharged directly into the proper Finish Silo. The ⅜" x 3/16" aggregate is carried directly by another belt conveyor to the number 2 Finish Silo. The 3/16" by 0" aggregate is carried directly by a 48-ft belt conveyor to the number 3 Finish Silo. This system of belt conveyors also provide a means of returning the ¾" to ⅜" aggregate back to the clinker silo in the event that this size might require finer finish sizes.

Constant Volume Feeders

The clinker silo and all three finish silos are all in the same size and design as the raw slate silos. Each is likewise equipped with constant volume feeders at the discharge openings which feed directly to the belt conveyors used for withdrawal. All belt conveyors in the plant system were custom furnished by Barber-Greene.

Finished Galite aggregate can be fed from any of the finished silos for loading the cars in any separate size; or any blend comprising the required proportions of two or more sizes can be drawn, mixed and loaded from the finished silos, thereby assuring complete uniformity in any gradation requirement.

The discharge feeders of all finish silos feed directly to a common 54-ft. belt conveyor which in turn discharges through a rotary blade mixing chute to an inclined 75-ft. belt conveyor. The inclined conveyor in turn discharges through another mixing chute onto a 27-ft shuttle conveyor which is mounted on a steel supporting frame and can be hand cranked into position over rail cars being loaded or positioned for truck loading on the opposite end.

Market in Southeast

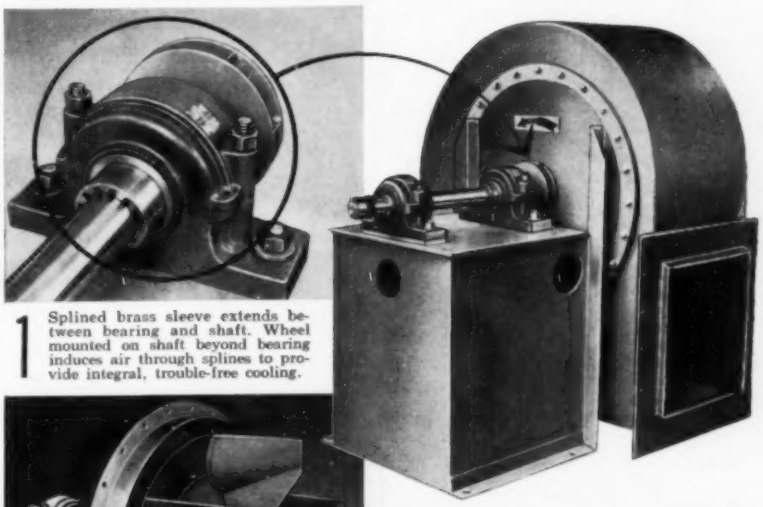
Galite, the registered trade name of the aggregate produced by the Georgia Lightweight Aggregate Com-

Continued on page 104

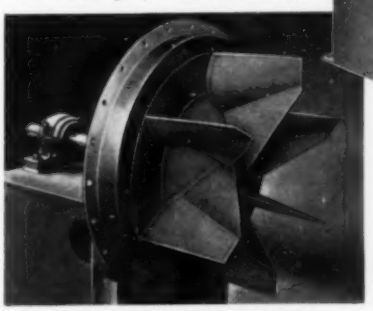
3 *outstanding features make this*

ROBINSON EXHAUSTER

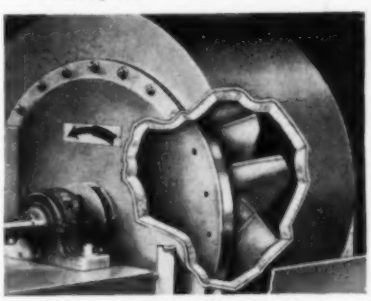
BEST for recirculating hot air in kilns—up to 1650°F.



1 Splined brass sleeve extends between bearing and shaft. Wheel mounted on shaft beyond bearing induces air through splines to provide integral, trouble-free cooling.



2 Cartridge type wheel assembly is removed from the drive side of the exhauster. Inspection and maintenance of both wheel and exhauster is simplified and speeded, without entering kiln.



3 Steel outer skin and alloy inner casing are separated by high-temperature insulating material, minimizing heat loss in kiln air, and reducing heat radiation and conduction to other parts.

Three unusual features—exclusive integral self-cooling, cartridge-type wheel assembly, and carefully engineered use of insulation and alloys—help Robinson High-Temperature Exhausters give unsurpassed efficiencies in recirculating hot air in kilns. These important features are the results of Robinson's long experience in improving air handling procedures in the ceramic industry's high temperature operations.

Because a successful kiln or dryer design depends heavily on proper air handling, Robinson engineers will work in a consulting capacity with your designers and builders. It is added assurance that you will get the most economical and efficient firing and drying facilities.

If you are building new facilities, or refurbishing existing ones, specify Robinson—for superior air handling matched to proper kiln and dryer design.
Write today for literature.

INDUSTRIAL FANS · BLOWERS · EXHAUSTERS

ROBINSON VENTILATING CO.

119 HENDERSON STREET, ZELIENOPLE, PA.

Circle Service No. 57

- **Fluorspar**
- **Magnetite**
- **Chromite**
- **Manganese**

We have recently built a completely modern plant in Brownsville, Texas, to process minerals for the brick trade to size and high chemical specifications. Custom grinding facilities are available.

This plant means more efficient service and, as a shipping point for other NP & M products, quicker delivery for our customers in the West and Southwest. It represents another step in our expansion program designed to meet the increasing demand for our wider range of products. Those listed here are all immediately available and will be milled to your requirements.

Our consistent growth over the past 65 years is a measure of the personal service you may expect from us as well as the quality of our products.

NATIONAL "ALWAYS UNIFORM" ESTABLISHED 1904

CONTRIBUTING ASSOCIATE SCPI

NATIONAL PAINT & MANGANESE COMPANY

A division of Howe Sound Co., Inc.

Lynchburg, Virginia

Circle Service No. 58

ROCKFACER

U. S. Pat. No. 2,801,626. Foreign Pats. Pending

- Enables you economically to satisfy growing demand for highly profitable rockface brick.
- Doubles the textures of brick you offer, without increasing inventory.
- Turns your culls into No. 1 premium brick.
- Far thriftier than hand rockfacing.
- Increases mark-up with rockfaced texture at negligible cost.
- 2,000 brick-per-hour capacity.
- Gives you a new byproduct to sell — BRICK CHIPS for road or roof chat, without cost to you.

Used around the world. Hundreds of satisfied customers (names on request).

Send samples of your brick to be test-rockfaced for your inspection.

ROCKFACER COMPANY

503 Hickory Tree Rd. (P. O. Box 547), Mesquite, Texas
phone ATlantic 5-6316

Circle Service No. 59

Firing Heavy Clay Products—Part 1

Four Basic Steps in Firing Detailed

Here is a new series by J. G. Seanor on the firing of heavy clay products. The article is written not only for engineers, but also for kiln firemen, head burners, and assistant superintendents. While some of the statements are not in accordance with traditional brick yard practice, the editors believe that the readers will find them technically sound. The series will continue in BRICK & CLAY RECORD until complete.

by
J. G. Seanor
The Bonnot Company
Canton, Ohio

For the sake of simplicity, the word "brick" will be used in the following discussion of firing, and unless otherwise specified "brick" will mean any heavy clay product. The basic principles of firing are the same for most clays, any ceramic ware, or any type of ceramic kiln. Details of firing vary greatly.

Brick are fired or matured by bathing them in combustion gas, or mixtures of combustion gas and air. The combustion gas, or mixture of combustion gas and air can be termed "kiln gases". Kiln gases must be of the proper temperature at the right time during the firing process. Kiln gases must also be in sufficient volume at all times for efficient firing.

Basically Combustion

While "kiln gases" are basically combustion gases or mixtures of combustion gases and air, their chemistry is complicated by gases given off by the brick at different stages of the firing process, and under some conditions certain atoms in the kiln gases enter into permanent compounds within the brick itself.

Sometimes kiln gases for certain purposes are doped with fumes from volatalized salt, borax, zinc and other materials. Combustion gases from sea-weed which contain many obscure chemical compounds are occasionally used in finishing a kiln for the color effect.

Much has been written about the chemistry of combustion gases. Most of it deals with carbon, carbon mon-

Continued on page 111

TYLER
wire cloth
is tailor-made
to give you
the most profit

Tyler can supply all types of wire cloth — and screen sections fabricated to fit every existing type of vibrating screen.

Tyler does more than manufacture 53,000 different specifications of wire cloth. It starts by designing the specifications to solve each problem to your greatest profit.

Selection and control of the metal is important—especially where corrosion, abrasion, or contamination are factors. Tyler controls the design of all metals and alloys used in weaving, and in addition operates its own wire mill for processing all its non-ferrous and many of its stainless steel wires. Tyler Screens are literally tailor-made for maximum profit to the user.

Ask your Tyler representative for full information—through him you'll get *Tyler Screening Service.*

WOVEN WIRE SCREENS · SCREENING MACHINERY
TESTING SIEVE EQUIPMENT

TYLER

The W. S. TYLER Company · *Cleveland 14, Ohio*
OFFICES: New York · Chicago · Boston · Philadelphia · Atlanta · Dallas · Los Angeles · San Francisco
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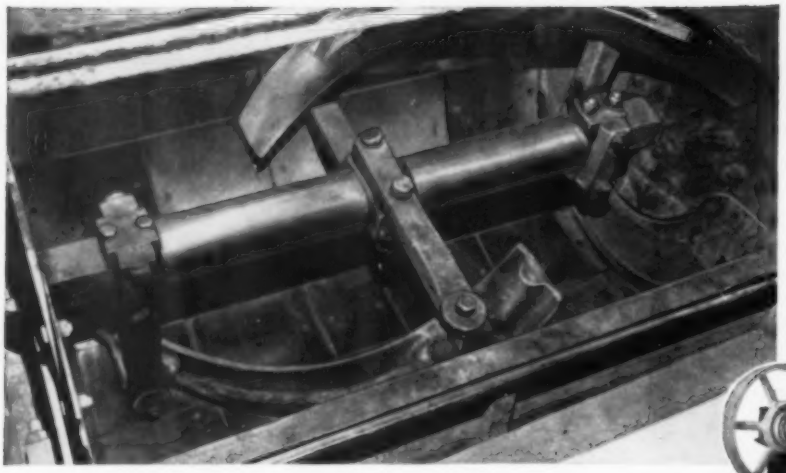
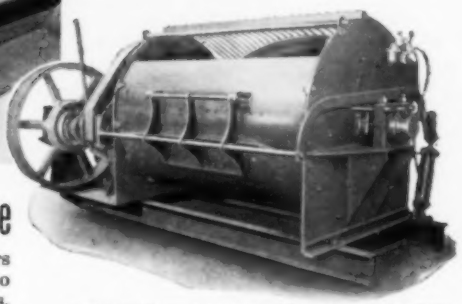
Circle Service No. 60



BATCH MIXERS *by* BESSER



No liners or blades replaced during 4½ years service

The illustration above shows one of the two 50 Cu. Ft. Besser Batch Mixers after 4½ years of hard continuous service in a Mid-Western block plant. At no time during the 4½ years was it necessary to replace either blades or liners. Besser Mixers are built to resist toughest operating conditions. Drum shells are made of heavy rolled steel. Replaceable inside liner sections are made of Ni-Hard abrasion resisting iron. Extra heavy blade shafts prevent bending or twisting. Mixer Blade Shaft Covers eliminate build up and wear on blade shafts and permit easy cleaning. Twin spiral mixer blades are also made of Ni-Hard abrasion resisting iron. Thousands of enthusiastic users attest to Besser Mixer economy and long life performance. Ask for Bulletin 111-A.

• *Besser 50 cu. ft. mixer with motor, V-belt drive, steel cut gears running in a continuous oil bath and fully enclosed anti-friction bearings. Other sizes available: 5, 12, 18, 25, 30 and 40 cu. ft.*

Note: All blades and liners are made in Besser Company's own foundry and licensed by International Nickel to produce and sell abrasion resisting white iron under the trade name . . .Ni-Hard.

BESSER Company, Complete Equipment for Concrete Block Plants *Alpena, Michigan, U.S.A.*

Circle Service No. 85

NOW

100% AUTOMATIC MOISTURE CONTROL

EMC 703

In Your Pug Mill or Batch Mixer.

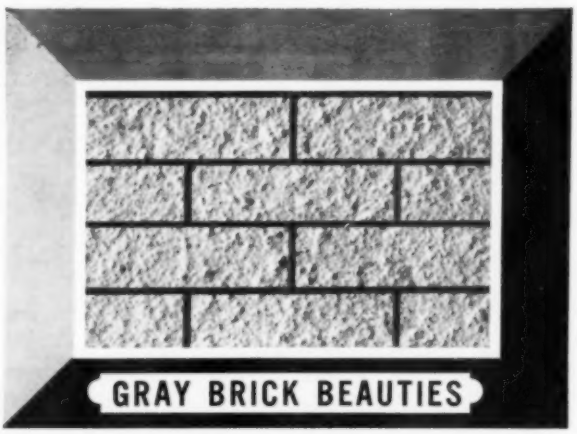
Installations in:

Common Brick
Flue Lining
Drain Tile
Sewer Pipe
Face Brick
Refractory
Telephone Conduit
Plants

Automatically holds desired moisture content; insures against product size variation; removes human error.

WALTER C. STOLL & SONS
5028 Alhambra Ave.
Los Angeles 32, Calif.
P. O. Box 32186

Circle Service No. 87



made with Foote EBONY Manganese

Air floated Foote EBONY Manganese Ore—*famous for more than 30 years as the industry's No. 1 gray coloring agent*—gives outstanding color uniformity to a variety of gray brick formulations. The consistent and extreme fineness of this material produces flat gray shades that are free of specks and patches of lights and darks. The shades produced in different parts of the kiln are so uniform that sorting is usually unnecessary.

Write for complete details on EBONY Manganese Ore, FETALITE, and Foote's many other ceramic materials.

FOOTE MINERAL COMPANY
442 Eighteen West Chelten Building
Philadelphia 44, Pa.

Circle Service No. 88

Continued from page 80

sents a hardship both on the company and on the man; nevertheless, we find the time is very well spent. In fact, we have developed somewhat of a planned program in advance whereby these men are scheduled to attend courses.

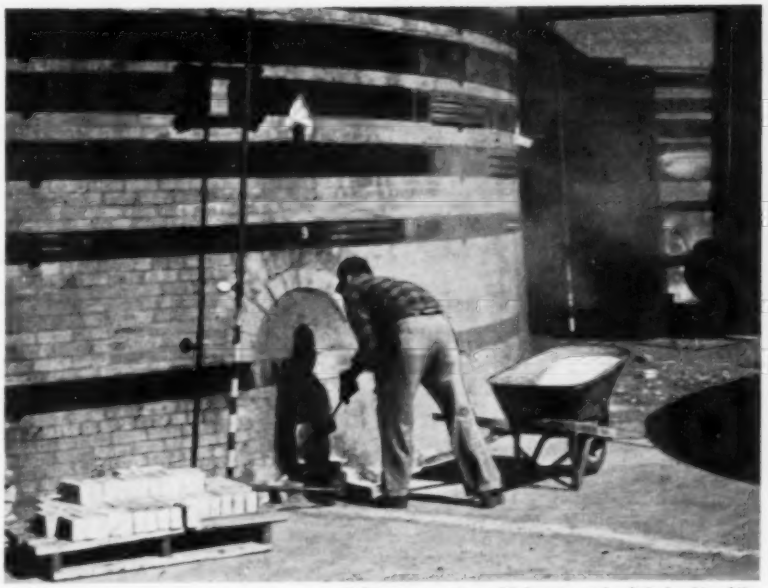
One of the delicate problems of a multiplant organization is to select men for jobs as openings occur through acquisition, death or other causes. We adhere to the policy of considering our entire company as a reservoir of men who can be considered for greater responsibility and, therefore, we try diligently to promote from within. Where certain professional skills are needed, these occasionally must be sought from without our company. We have a specific procedure whereby we pick men for jobs. This has been followed many times, and as a result we feel that we tend to overlook no potential timber as new jobs occur.

Handling of People

Most of this discussion has had to do with the handling of people. This perhaps is not surprising since it has now been fairly well established that a company in our American Way of Life is merely a group of people working together at the job of earning a living. These people have different types of knowhow, different types of experiences, training and capabilities. The job is to sort out these various types of talent and motivate the group so that they come nearer to performing to the maximum of their potential.

Whereas a company cannot exist without raw materials, brick, mortar, machinery and money, it has now been clearly established it cannot prosper, grow, mature, and succeed without the all important ingredient —people. Our type of industry is interesting in that our customers are well defined, their needs well known and their locations well established.

We sincerely hope that through knowledge of our customers' needs, proper management of our financial resources and motivation of properly placed people, we will continue to lend prestige to our industry and prosperity to our company.



Salting sewer pipe with borate and salt in beehive kiln.

Salters! get a better glaze...

add RASORITE® 46
sodium borate concentrates

...a thrifty form of borax for you!

When used for salt glazing, RASORITE 46 is a real performer! This low-cost borate ore concentrate equals higher priced borax and boric acid in its salt-glazing action. You get their benefits at a discount. So, add RASORITE 46 to your salting to improve the quality of your ware... to save on fuel costs... to get increased production with fewer rejects. Remember, a borate-salt mixture yields the best glazes for sewer pipe... and RASORITE 46 gives you the most B_2O_3 for your money!

Write for further information today!

UNITED STATES BORAX & CHEMICAL CORPORATION

630 Shatto Place, Los Angeles 5, California

Sales Offices in: ATLANTA • CHICAGO • CLEVELAND • NEW YORK • PHILADELPHIA • ST. LOUIS

Circle Service No. 62

Complete Automation on Kiln at Guignard

The new tunnel kiln at Guignard Brick Co. is automatically controlled from pusher end to discharge end. Firemen's duties are eased considerably.

A new Harrop tunnel kiln and dryer with the latest in automatic innovations has recently enabled the Guignard Brick Company of Columbia, South Carolina to double its production.

With the plant originally designed for two kiln operation, the installation of the second kiln posed no great housing problem. All that was necessary to provide housing was an additional 40-ft lean-to running along the length of the existing building. The lean-to was needed for unloading the additional production attained.

The machine capacity for two kilns was originally installed when the first tunnel kiln was built. The entire plant story and the story on the first tunnel kiln was reported in the January, 1958 issue of BRICK & CLAY RECORD.

James Parker, plant superintendent looks over automatic pusher controls.

The new kiln at the company has a nominal production of 50,000 standard units per a 24 hour day, bringing the entire plant production of the 157 year old company (the first brick was made by John Guignard in 1803) to 100,000 brick per day.

Making 43 different sizes, colors, and combinations of these, the company embarked on its expansion program which was completed in December of 1959. The kiln features such items as high temperature recirculation in the pre-heat zone of the kiln, quick cooling and quenching in the cooling zone in the kiln, the use of excess air in pre-heat portions of the kiln and a hydraulic system which automatically charges the kiln car.

A double track dryer 122 feet long with each track holding ten cars, preceeds the kiln. A temperature of 450° is attained in this new dryer.

Continued on page 106

new markets! new profits!

with "hand dressed"

BRICK

by **PITCHMASTER**

Here is a machine that incorporates the skills of the craftsman with more production muscle than twenty men.

Reach NEW markets, NEW profits by offering a NEW brick with greater depth of beauty.

- Culled brick can be converted to premium priced material.
- Fifty lineal feet of "Hand-Dressed" brick per minute.
- Instant adjustment to material height and depth of pitch. No limitation on material length.
- All material is conveyed through machine in a continuous flow by belts and rollers. Machine maintenance is reduced to the absolute minimum.

No other comparable machine in the field today will match the productivity and dollar profit that PITCHMASTER affords to make it a common sense investment.

NEW AND REVOLUTIONARY IN DESIGN! TESTED AND PROVEN

Names of satisfied users furnished on request

$4000.00
F.O.B. FRANKFORT, INDIANA

E & R MFG. CO. INC.
FRANKFORT, INDIANA

Circle Service No. 63

Clay Products European Tour Scheduled to leave July 30

A second clay products industry European tour modeled after the highly successful 1955 excursion is tentatively scheduled to leave New York July 30th.

As was the case five years ago the itinerary has been worked out to include the following:

Visits to interesting European clay products plants and important and scenic spots in Europe.

Opportunities to inspect new construction methods developed by European builders!

A chance to see the most possible in the shortest amount of time.

However, with much more leisure interspersed than was true in 1955.

Highlights of the tour will include a special visit in Oslo with Anton Disch, who formerly worked with Bob Taylor at the Structural Clay Products Research Center. Disch holds a position similar to Taylor's, with the Norwegian brick manufacturers. Another feature of the trip will be an opportunity to meet and talk with Peter Hartmann in Copenhagen. He is an outstanding exponent of prestressing.

Will Visit German Plants

In Munich plans are being completed to enable the tour members to visit local brick plants in the area. In all of the forementioned cities as well as in several others there will be ample opportunity to visit the outstanding cathedrals, museums, monuments, etc., as well as the many restaurants and inns. A tour through the Bavarian Alps is included on the Munich and Innsbruck portions of the trip.

In Oslo for example a visit to the startling—Vigeland Sculptures will undoubtedly rank high on the list of things remembered. In Copenhagen a visit to the Christianborg castle is included on a tour of this famous Danish city. The visit to Norway will include an excursion to the beautiful and famed Fjords.

The tour will spend three days in Madrid with a full day visit to El Escorial planned. Other cities included on the itinerary are Glasgow, Lom, Ulvik, Bergen, Hamburg, Vienna, Munich, Innsbruck, Geneva, Nice and Paris. The tour is arranged so that the sightseeing plans will still leave enough leisure time for dining, shopping and just generally relaxing.

The approximate cost of the entire trip including all expenses is substantially cheaper than that of traveling individually. It includes air transportation, hotels, most meals, baggage transfer, hotel tips, guides, side trips to clay plants and all travel and living costs. The trip will terminate in Paris, arriving there on Monday August 29th, and allowing some sightseeing for those who wish and permitting others to return to New York on August 30th.

All arrangements for the trip are being handled through the Chicago office of the American Express Company. Complete details may be obtained by writing to Box E.T., BRICK AND CLAY RECORD, 5 South Wabash Avenue, Chicago, Ill.

ORGANIC BINDERS

GLUTRIN

(liquid)

or

GOULAC

(powder)

Especially suitable for increasing the molding and dry strength of

- BRICK
- CLAY REFRACTORIES
- NON-CLAY REFRACTORIES
- SILICA REFRACTORIES
- REFRACTORY CEMENTS
- PLASTIC REFRACTORIES
- TERRA COTTA
- STRUCTURAL TILE
- SEWER PIPE
- SAGGERS
- FLUE LINING

Small amounts required—easy to use. Economical and larger production of first quality product absorbs the investment many times.

Many successful users. We'll be glad to submit samples and our suggestion on procedures and amount needed.

Robeson Process Company

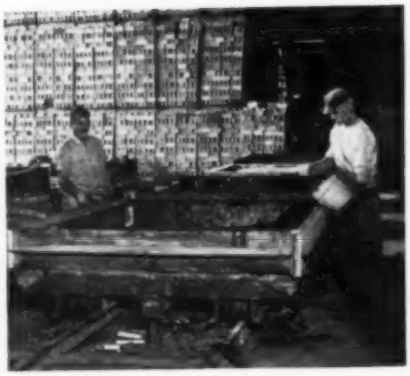
P.O. Box 960 • Erie, Pa.

Circle Service No. 64

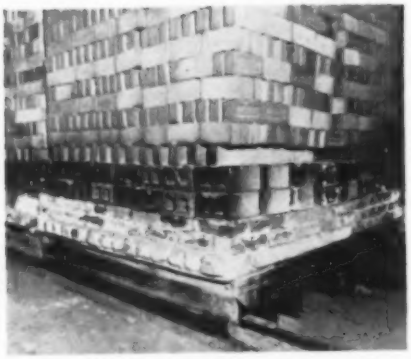
300% INCREASE
IN CAR TOP LIFE

MOLDIT PIER CASTABLE REFRACTORY replaces car top firebrick at prominent eastern brick plant

Completed car top showing monolithic Moldit Pier block sections. Elimination of firebrick joints increases car top life — prevents expansion of car top and resultant jamming of cars in kiln.



Pouring Moldit Pier Castable into simple wooden forms set on car top.



Worn and eroded car top firebrick after only 6 months service. Replacement of broken firebrick is a tedious, expensive job. New Moldit Pier block sections are easily removed and a new section poured quickly.

R&D

REFRACTORY & INSULATION CORP.

128 WALL STREET • NEW YORK 5, N. Y.

Sales Offices: Chicago, Ill.; Cleveland, Ohio; Bryn Mawr, Pa.; Newark, N. J.; Buffalo, N. Y.

Manufacturers of | Castable and Bonding Refractories; FURNACE BLOX; Blankets, Block, Plastic and Fill Insulations.

Circle Service No. 65

Continued from page 97

pany, is being used extensively throughout Southeastern United States from the Mississippi River to the Atlantic Coast and south into Florida. The product is being used in the production of lightweight concrete blocks having low weight, high strength and good sound and heat insulation properties. Galite is also finding increased use in the production of lightweight concrete floor and roof slabs and fire resistant concrete coatings for steel beams.

Concrete Properties

In the field of structural concrete, Galite Aggregate is producing 3000 to 6000 psi concrete at conventional cement contents on important major buildings of the Southeast. These structural concretes have a unit weight of less than 100 lbs. per cubic foot as compared with the normal weight of 150 lbs. per cubic foot for conventional heavy weight concrete.

An 8" x 8" x 16" standard block using Galite weighs 26 lbs. compared to 40 to 47 lbs. for the heavier aggregate.

Officers and directors of Georgia Lightweight Aggregate Company are Alex MacDougald, chairman of the board; Otto C. Frei, president and general manager; R. F. Holahan, vice president; P. B. Daly, secretary-treasurer; Lane W. Wilcox, sales & service engineer.

Main offices of the company are maintained in Atlanta, with the sales and service personnel operating from this office. Production offices are in Rockmart, at the plant location.

Equipment Suppliers For Georgia Lightweight Aggregate Co.

Shovel	Lorain
Raw Material Trucks	Euclid Division of General Motors
All belt conveyors	Barber-Greene Company
Primary crushers	Telsmith
Secondary crusher	MacLanahan and Stone
Rotary kilns	Allis-Chalmers
Screens	Seco
Kiln burners	Hauck Mfg. Co.
Kiln controls	Foxboro
Dust collector	Multiclone
Exhaust fans	Claridge
Finish Crushers	Kennedy-Van Saun and Symons
Weighing Feeders	Hardinge

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MILANO, ITALY

proprietor of the international patents for

DRYING PROCESS WITH

ROTOMIXAIR

FAGIOLI

for hollow bricks tiles and sewer pipes
is looking for an exclusive selling and manufacturing

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For further information, please apply to:

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P.O. Box 4189—Milano A.D., Italy

Circle Service No. 66

THE PRIESTER TRUCK CRANE

(PATENTED)

16 units of 500 bricks each unloaded by driver alone, merely pushing buttons.

Unloads off either side. Puts loads on sidewalk where they belong. Requires less than half the unloading space that other devices need. Handles brick or block unpalleted or palleted or packaged. Not necessary to move truck. Unloads one, two or all units at one place! No chipping or breaking bottom bricks or blocks. Gentle handling. For full details, ask for Bulletin TC53.

BRADNEY MACHINE CO., INC.

Middletown, N. Y.

Circle Service No. 67

Continued from page 102

On the automatic hydraulic system which was engineered by Harrop, the following sequence is followed, all automatically. When the scheduled push is completed on a cycle, the dolly attached to the hydraulic ram hits a limit switch, the ram returns until the dolly hits another limit switch, and stops.

Guillotine Door

The No. 2 guillotine door inside the kiln at the discharge of the vestibule goes down and at the same time the No. 1 door which is the entrance to the vestibule goes up. The kiln operator then pushes a reverse button which allows the ram to position itself under the car on the transfer car. When the operator pushes the forward button the ram pulls the car into the vestibule and positions it. When the car is positioned the dolly hits a limit switch, then returns and upon hitting another limit switch, it stops. The number 1 door then comes down and the number 2 door in the vestibule goes up. As the number 2 door reaches its final up position it then hits a limit switch and the hydraulic system automatically goes on a schedule push. The entire cycle for charging the car automatically is approximately 4 minutes.

The kiln is basically the same length as the original Interkiln, 252-ft. long. There are, however, several patented features of the Harrop kiln which are an improvement over the original kiln installation.

High temperature recirculation is accomplished in the pre-heat zone of the kiln by the use of excess air burners and two centrifugal type high temperature recirculating fans. All told there are a total of 26 North American excess burners used in the pre-heat auxiliary section of the kiln, 13 on each side. In the furnace section 22 North American burners plus 4 top position burners are used to mature the ware.

Quenching and Cooling

Provision has been made in the new kiln for a quenching and quick cooling section. As brick leave the furnace after their maturing temperature of 2,020° the brick are rapidly cooled to the inversion point of silica, through the inversion temperature slowly, and then cooled to room temperature.

As the ware is removed from the kiln, the cars are transferred to 3 new loading tracks which have been installed in the before mentioned lean-to. The brick are packaged and strapped at this location.

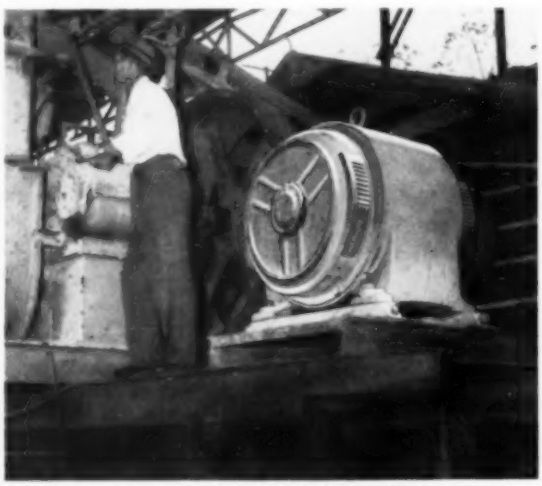
Coloring Agents

Other changes that the company has made with the installation of their new kiln have included the use of coloring agents. Ferric sulfate is being used as is manganese sulfate. The company has always utilized a certain portion of 58% light soda ash in their clay mix. This soda ash is used to keep the water content of the clay at a minimum.

L. V. Bruno is the president of the company. James W. Parker is plant superintendent.

For the complete story of the operation of Guignard, see the January, 1958 issue of BRICK & CLAY RECORD.

THE BROOK MOTOR IS A "BRICK"!



Few structural materials compare with brick for long life; resistance to weather, moisture and vermin; and long range economy. The same applies to Brook Motors — they are built for tough, grueling jobs — yet they cost less than ordinary motors. Used all over the world. Available in all standard enclosures — 1 to 600 HP. The 125 HP motor shown drives a Steele pug mill at Union Brick Co., San Diego, Cal. Send for brochure and name of your dealer.

SINCE 1904 BROOK ELECTRIC MOTORS

"World's Most Respected Motor"

BROOK MOTOR CORPORATION
3302-04 W. PETERSON AVE., CHICAGO 45, ILL.
IN CANADA: BROOK ELECTRIC MOTORS OF CANADA, LTD.
250 UNIVERSITY AVE., TORONTO, ONTARIO

Warehouses, Factory Representatives, Distributors Coast-to-Coast.

Circle Service No. 68

Firm's Brick Good as Gold? It IS Gold.

It is now possible to build a house of genuine gold brick, but it's not likely that many people will.

Only the homes of the well-heeled dogs or cats fall within the size range of such a distinction, and even these accommodations would have to be quite cozy.

The purveyor of this admitted luxury is Acme Brick Co., Fort Worth, Texas, a firm whose lavish use of gold brick in its new branch sales office obviously was possible only because of the special rate the company affords itself.

In lots of 1000, the brick cost 52.5 cents each. Acme used 2975 of them for a decorative front wall.

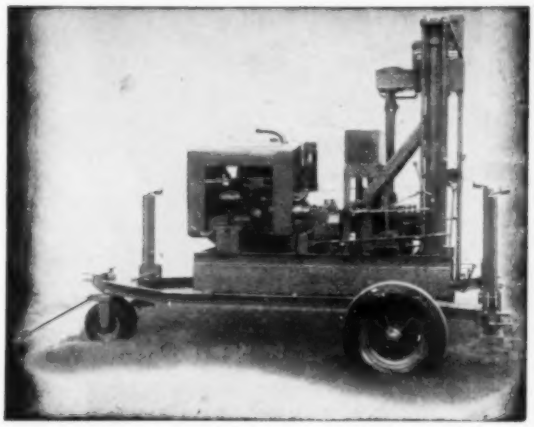
An ordinary brick is first given a clear glaze fired finish, then a metallic glaze of gold compound spread at the incalculable depth of 1/1000 millimeter, and fired again.

Also available, at the same price, are platinum, bronze and copper brick.

IN MINUTES . . . INSTEAD OF DAYS

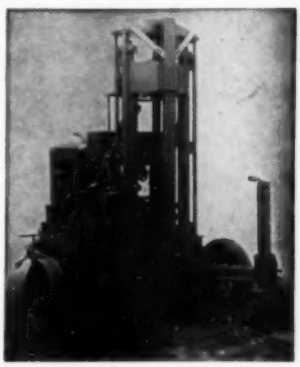
Samples obtained from depths up to 100 feet with the all new

Parmanco



Model HV-172
Hydraulic Vertical Drill

- **HEAVY DUTY**
- **FOUR SPEED AUGER**
- **FINGER TIP CONTROL**
- **65 H. P. MOTOR**
- **ALL DRIVES MOUNTED ON TIMKEN ROLLER BEARINGS**



RUGGED COMPACT EASY TO OPERATE

●

THREE LEVELING JACKS TO INSURE STRAIGHT HOLES. FIELD PROVED

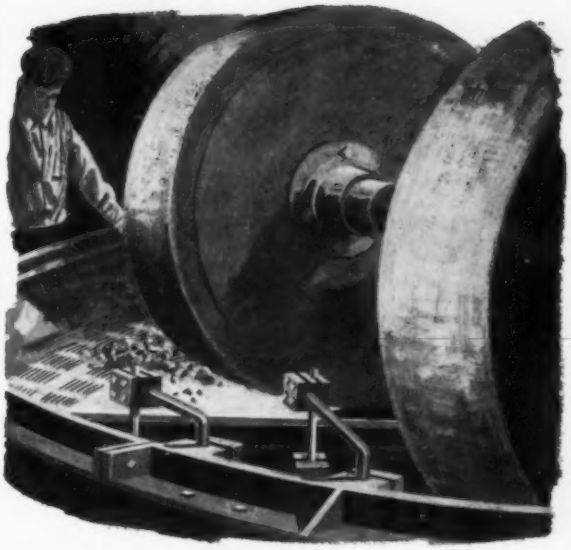
Complete Information on Request

SPECIALISTS IN AUGER TYPE DRILLS

PARIS MANUFACTURING COMPANY

PARIS, ILLINOIS

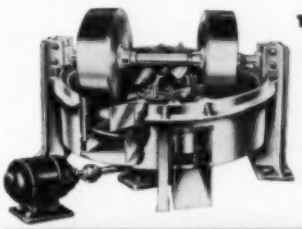
Circle Service No. 69



Heavy reductions that make other grinders SHUDDER are routine for Clearfield Dry Pans!

Clearfield machines are built to take heavy loads in stride. Ruggedly constructed of durable cast iron, they serve for years and years with minimum attention. Since all Clearfield dry pans have revolving pans with screen plates in the bottom, fineness of grind can be easily and accurately controlled. Crushing rolls are wide faced and spread far apart to give maximum crushing area per revolution. High production is achieved without excessive pan speeds, thereby reducing vibration . . . prolonging life of the machine.

There's a Clearfield machine to meet every grinding and mixing need. Send for our technical bulletins and see why Clearfield machines last longer, grind better . . . for less money.



THE MODEL 900 DRY PAN, our latest model, features totally-enclosed direct motor drive for easier maintenance, lower production cost. Comes in 8½ and 9-foot diameters.

CLEARFIELD MACHINE COMPANY

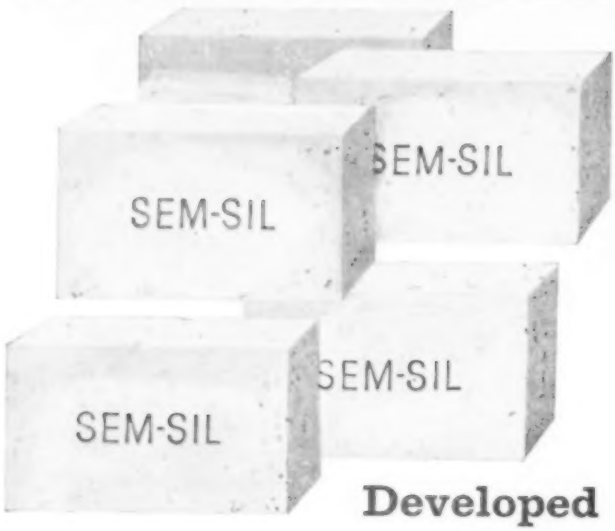
CLEARFIELD, PENNSYLVANIA, U.S.A.

Pacific Coast Representative:
Fernholtz Machinery Company, 8468 Melrose Place, Los Angeles 46, Calif.

Circle Service No. 70

CONGRATULATIONS TO A. P. GREEN FIREBRICK CO.
ON THEIR 50TH ANNIVERSARY

NEW PORTER "SEM-SIL"



Developed for Ceramic Tunnel and Periodic Kilns

for service to 2600°F.

Seventy-five per cent silica, dense and tough . . . that's "Sem-Sil." Porter "Sem-Sil" develops an excellent glaze on the hot face to choke off penetrating gases and increase service life.

In fact, everything desired in a refractory for heavy duty ceramic work is found in "Sem-Sil" in *plus* quantities . . . good volume stability, high temperature load bearing qualities and outstanding resistance to spalling.

Get the full story on Porter "Sem-Sil" now! Write: *Refractories Division, H. K. Porter Company, Inc., Porter Building, Pittsburgh 19, Pa.*

REFRACTORIES PORTER DIVISION

H. K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.

Circle Service No. 71

Obituaries

W. P. Sanders

William P. Sanders, 60, owner of the Ideal Brick Co., Slocomb, N. C., on May 3, 1960. Sanders suffered a heart attack several days previously from which he was recovering until his relapse which led to his death. He had owned and operated the Ideal Brick Co. since 1948 and had extensive farming interests in North Carolina.

James I. Gibson

James I. Gibson, retired superintendent of Kittanning Refractories, Inc. on April 25 at his home in Kittanning, Pa.

His retirement began in 1952 after 49 years of service in the brick industry.

William R. Moore

William R. Moore, 69, on May 12, former Norton Co. vice president in Clearwater, Fla., where he lived since his retirement in 1956.

Moore was with the Norton Co. 42 years, 13 as vice president.

George Wallick

George W. Wallick, 72, on May 11 at his home in Dover, O. Wallick retired in 1948 after 43 years of service with Robinson Clay Products Co.

John C. Morlan

John C. Morlan, 56, on May 5, in Salem City, Ohio. Morlan was a foreman at the MacLain Fire Brick Div. of the H. K. Porter Co., Wellsville, O.

William J. Murphy

William J. Murphy, 79, who worked for many years for the Claycraft Co. before his retirement on May 17 at Shawnee, O.

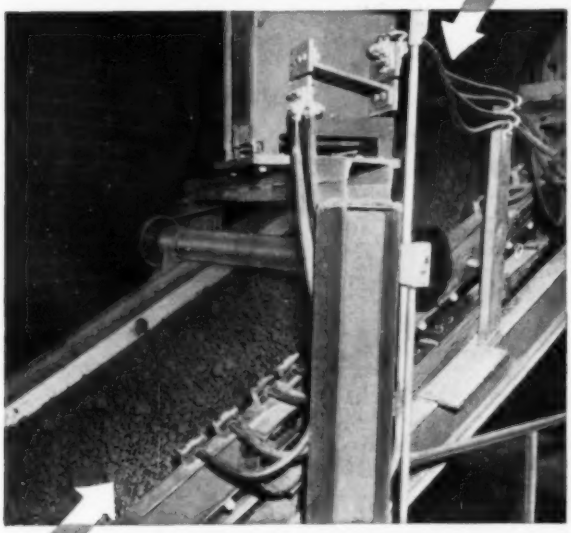
Joseph S. Mohr

Joseph S. Mohr, General Refractories' Regional Sales Manager in Chicago on May 22. Mohr had served in the company's Chicago post since 1935.

Victor A. Steahlin

Victor A. Steahlin, 60, on May 22 in Denver, Colo. He worked for Denver Fire Clay Co. for 23 years before his retirement in 1946.

If this is your kind of material...



THIS IS YOUR KIND OF SCREEN

LINK-BELT "UP" electrically heated vibrating screens accurately size sticky materials without blinding

HERE'S a dependable answer to the blinding and plugging problems of handling medium and lightweight materials when they're damp and sticky. Link-Belt "UP" vibrating screens with electrically heated cloths operate with high-velocity action . . . always perform at maximum capacity . . . assure high-volume, precise sizing.

What's more, rugged construction and two-bearing simplicity keep maintenance and operating costs low. Self-aligning roller bearings are grease lubricated and fully protected by labyrinth seals and steel housings.

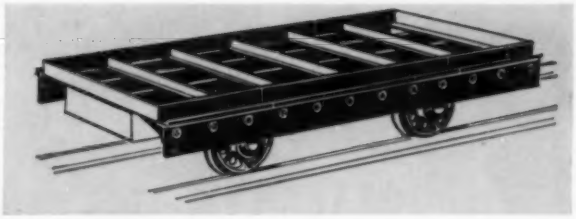
Link-Belt "UP" screens are available in open, semi-enclosed and totally enclosed types . . . single or multiple decks in a wide range of sizes. For complete details, contact your nearest Link-Belt office or write for Book 2777. 14,520

LINK-BELT

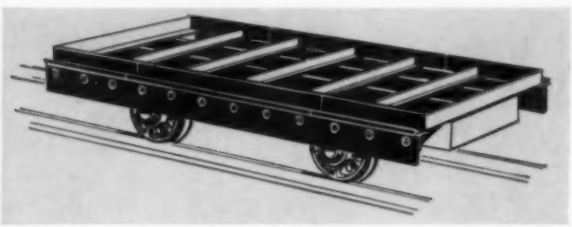
VIBRATING SCREENS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

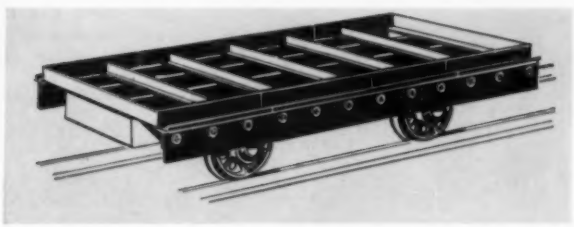
Circle Service No. 72



TRIP...



after TRIP...



after TRIP...

get smooth-rolling, trouble-free service with precision-built

CHASE TUNNEL KILN CARS

Cut costly downtime with Chase Kiln Cars built to your exact specifications. Every Chase Kiln Car has years of extra service built right in because of the careful supervision given to every step of manufacture.

Send your drawings or specifications for a prompt estimate, or ask our Engineering Department to adapt a standard car to your particular needs. Chase Kiln Cars can be built to fit any size or type of kiln.

CHECK THESE FEATURES:

- Wheels made in our own foundry, with a deep, uniform chill
- Treads are ground to accurate concentricity
- Car frames are assembled in jigs and welded in our own shop under close supervision
- Precision-type bearings of your choice will be used — specify roller, ball or Timken
- Final assembly is checked for perfect alignment before cars leave our plant

Chase FOUNDRY & MANUFACTURING CO.

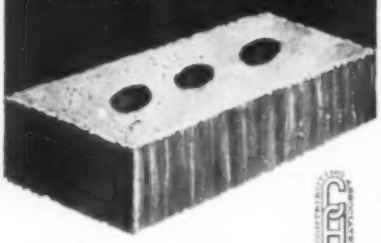
2350 Parsons Avenue • Columbus 7, Ohio

Circle Service No. 73

"MINERVA FLUORSPAR"

America's Finest FLUORSPAR

INSURES PERMANENT **COLOR CONTROL** OF LIGHT FACE BRICK



- Vitrifies at low temperatures.
- Stops formation of green scum.
- Costs approximately 50c per ton of clay.

Just 50c worth of Minerva Fluorite in every ton of clay insures precise color control of all light face brick.

This powerful flux eliminates the need for hard firing . . . prevents formation of green scum by permanently locking vanadium and iron salts inside the brick.

SAME-DAY TRUCK DELIVERY
From Wellsville, Ohio Warehouse
To
PITTSBURGH & CLEVELAND AREAS

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"HOW TO CONTROL VANADIUM EFFLORESCENCE"

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A DIVISION OF MINERVA OIL CO.
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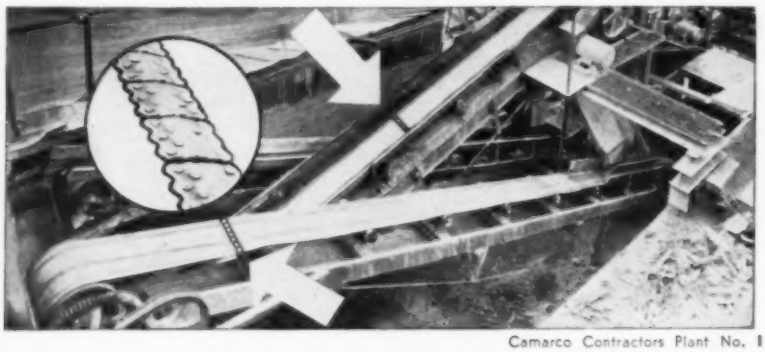
Circle Service No. 74

"We tried them all— then standardized on CRESCENTS"



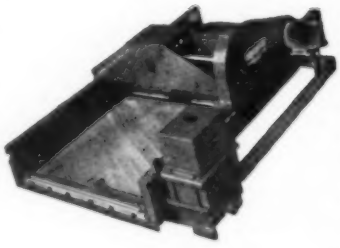
Camarco Contractors Plant No. 1

"Our conveyor belts take a terrific beating and only a rugged fastener will hold them. We found that CRESCENT plates did a superior job, and because of the speed with which they can be attached with CRESCENT self-clinching rivets, *WE CUT OUR DOWN TIME IN HALF!*"

NO HOLES TO BORE • **A HAMMER IS ALL YOU NEED!** • NO TOOLS NECESSARY

CRESCENT BELT FASTENER CO.
381 Fourth Ave., New York, N. Y.
TORONTO, CANADA BIRMINGHAM, ENGLAND
Distributors throughout the World
Circle Service No. 75

Outstanding Production Records Unmatched in Field



THE Leahy SCREEN
NO-BLIND VIBRATING
— offers —
INTEGRATED HEAT SCREENING

In the screening of clays and shales, there is no other equipment that matches the performance of the Leahy® screen with integrated FlexElex® jacket heating.

The key word in the above statement is "integrated". FlexElex heating is not an attachment. It is a built-in and fully integrated feature that completely eliminates bothersome flexible connectors while stepping up the efficiency of the heating circuits to get maximum usefulness of the power consumed.

Differential vibration and other features also help to keep the Leahy screen in a position of outstanding leadership. For full information send for Bulletin 16-EH.

THE DEISTER CONCENTRATOR CO., INC.
The Original Deister Co., Est., 1906
913 GLASGOW AVENUE FORT WAYNE, INDIANA

Circle Service No. 76

Continued from page 99

oxide, carbon dioxide, and oxygen. There is still some vagueness about combustion gases at very high temperatures. Combustion gas has a volume and a large percentage of the volume consists of Nitrogen which serves to dilute or temper the flame.

Many think of "flame" as occuring just above the fire bed or at the burner tip. A better definition of flame for an understanding of kiln firing is to define flame as "highly heated products of combustion".[1] In this case flame is present at the burner, or anywhere within the setting or in the kiln system.

It must be remembered that "flame" has volume as well as temperature and chemical constituents. There are many kinds of flame such as short-flame, cutting-flame, soft-flame, long-flame and a large percentage of the volume of any flame is nitrogen. It is important to have the right kind of flame in a kiln at the right time and at the right place. Control of flame characteristics will be discussed later in this exposition on burning.

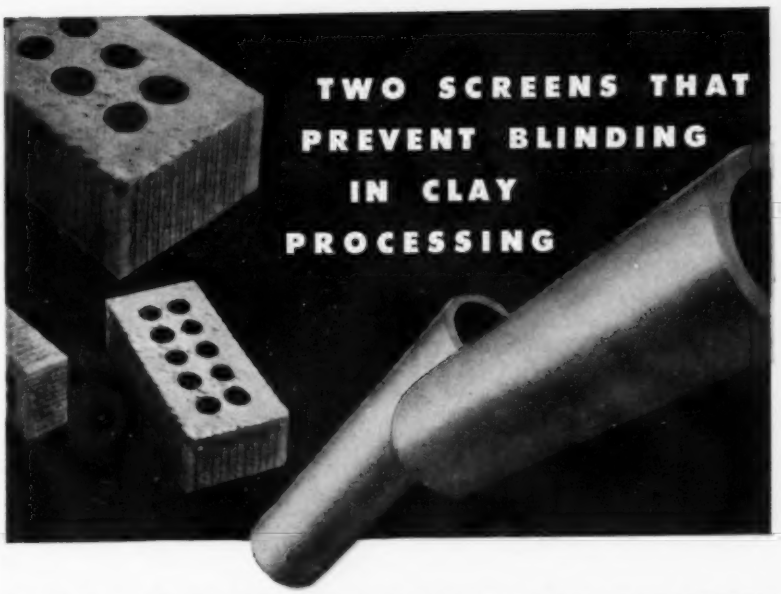
Steps in Kiln Firing

Kiln Firing is generally divided into several steps. According to this generalized division, the steps include: (1) Final Drying, (2) Dehydration, or water-smokeing, (3) Oxidation, and (4) Vitrification or soaking. These steps may be of overwhelming importance or of relatively little importance depending on plant conditions. For example, only in a few plants is any thought given to the problem of quartz inversion. In firing silica brick, taking the ware through the quartz inversion temperature range is done very carefully, but no thought is gvien to an oxidation step, because there is no carbon or sulphur in a good silica brick.

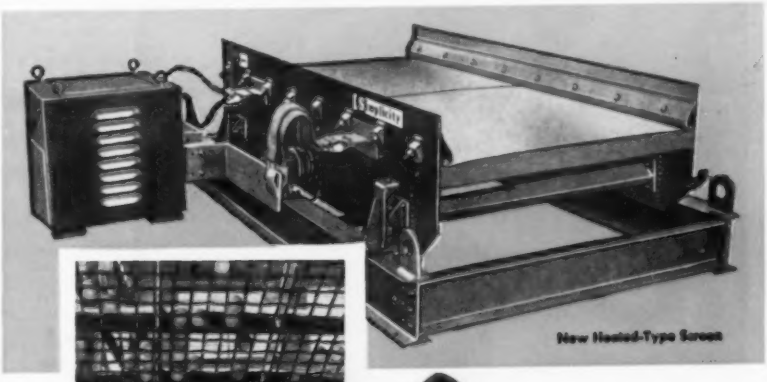
Final Drying

Few, if any, brick are really dry when put in the kiln. It is said that a final small percentage of mechanically held water is not expelled from the small diameter capillaries until above 500°F. In some cases, ware is intentionally set in the kiln with a small percentage of mechanically held water in order to prevent damage from "regain moisture" from the

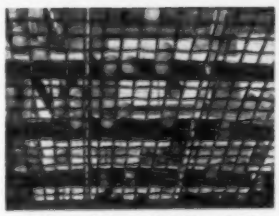
Continued on page 112



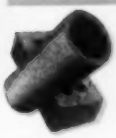
SIMPLICITY'S NEW HEATED-TYPE AND BALL-TYPE



New Heated-Type Screen



Underneath view of Ball Tray Deck



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Continued from page 111

surrounding atmosphere. Final drying is accomplished in the kiln on a rising temperature schedule which prevents regain. In other cases brick are taken from a dry press to the kiln without any drying, in which case the brick are dried in the kiln. Due to the fact that many dryers are inadequate in size and the brick are pushed through them too fast, many tunnel kilns are forced to do considerable drying. Periodic kilns, generally, do considerable drying. In any event, some final drying is done in the kiln and, therefore, the first step of firing is "final drying".

Dehydration

In this step of firing, chemically combined water is expelled from the brick. It is generally said to occur from around 300°F to above 1100°F. However, some chemically combined water is removed at temperatures below 300°F. In the case of a tunnel kiln into which brick are charged at temperatures up to close to 1000°F, some or much of the chemically combined water has been removed. In a case of this kind, the "preheater" is actually a detached water-smoking zone. If brick are fired in downdraft kilns having individual stacks, the smoke that billows from the stack during the dehydration period is white. The white color is due to steam from the water expelled from the brick. Hence, the name "water-smoking" or 'white-smoking" which is often plant vernacular for the dehydration period.

Oxidation

The principal elements that are burned out of the brick during this period are carbon, sulphur, and iron —in that order. It is said to take place from about 650°F to the final finishing temperature of the particular brick. However, if a brick contains bituminous carbon in granular form that swells—particles of coking coal—pitting of smooth surfaces will occur at rather low (actual brick) temperatures; and if the brick contains pyrite granules, you can get a distinct odor of sulphur at comparatively low actual brick temperatures if you break a brick open and smell it quickly. Pitting from swelling coal and odor from sulphur at rather low temperatures are probably not chemical reactions but are more physical in nature, or a roasting phenomenon.

Vitrification

Commercially, few heavy clay wares are "vitrified" but firing is stopped at some condition where partial vitrification has taken place. In an ideal condition the inert mineral fragments of the body—the natural or artificial grog granules—have not been softened by the temperature and retain their shape and position in the skeleton of the brick, while at the same time some of the finer particles of the clay mineral content of the brick have melted and form a glass matrix to hold the skeletal particles in place.

Continued on page 114

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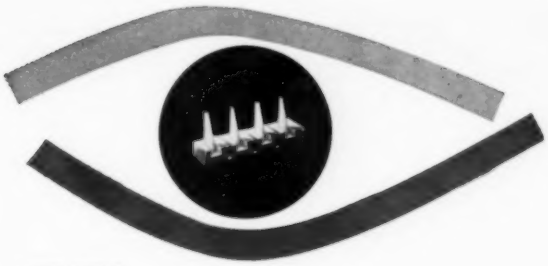

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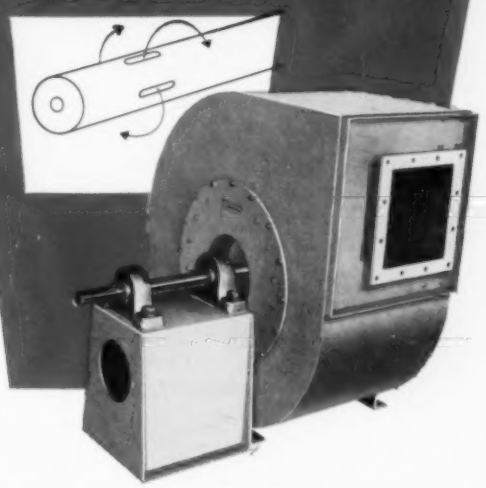

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Continued from page 112

In other places where the grog (usually only natural grog) fuses at, or about, the same temperature at which the clay mineral melts, the art of firing at this stage is to stop just before the brick deform and kiln-mark. Brick made from this type of clay are hard to fire during vitrification.

According to the nature of the clay, the temperature of vitrification may be as low as 1600°F for some surface clays to over 3000°F for some refractories. The temperature range of vitrification between incipient and complete melting may be short or it may be long. In some cases, the vitrification temperature range may be less than one cone, and in other cases it may be seven or eight cones. Some of the refractory clays of Southern Ohio have an exceptionally long vitrification range.

Consider Steps Separately

In the study of kiln firing, the steps are considered separately in this order: Drying, Dehydration, Oxidation, and Vitrification, and therefore one might get the idea that they are distinct steps. There is probably some overlapping in all cases. For certain purposes the kiln may be handled to separate the steps as much as possible, and for other reasons the kiln may be regulated to prevent separation of the steps as much as possible. Examples will be given later on.

Figure B-1 is a chart comparing the temperature range of the different steps. It will be seen from this chart that the temperature range of dehydration overlaps that of final drying. The temperature range of oxidation overlaps that of de-hydration; and in some cases, but not all, the temperature range of vitrification overlaps that of oxidation.

While these temperature ranges overlap to a considerable degree, under normal firing conditions, the steps are rather on the distinctive side. For example, little oxidation of carbon can occur when steam from dehydration is occupying the pore space and voids within the brick. Since carbon is more avid for oxygen than is sulphur, little oxidation of sulphur takes place until the carbon is gone. Sulphur is more avid for oxygen than is iron, and there is little oxidation of iron until the sulphur has been oxidized.

Sulphur Burnout

Sulphur, when it occurs in the form of pyrites, has a peculiar burning behavior. It comes out rapidly at about 1200°F, and as the temperature rises above 1200°F it stops coming off, until a temperature of around 1900° to 2000°F is reached where it begins to come off actively again. (These temperatures are actual brick temperatures and are not to be confused with thermocouple temperatures taken under the crown of the kiln). If vitrification begins at too low a temperature, bloating may occur due to entrapped gases from carbon or sulphur. Bloating and "black-coring" or "pink-coring" occurs when the temperature is advanced to the point of vitrification before carbon and sulphur has all been oxidized. Bloating is caused by entrapped gases.

Continued on page 116

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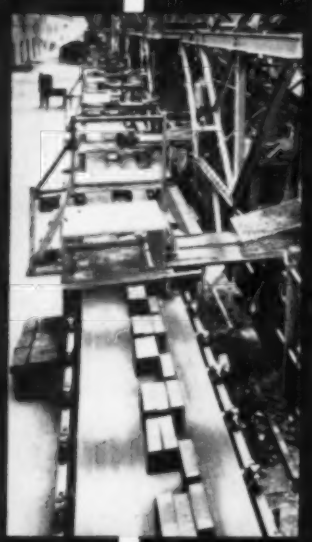

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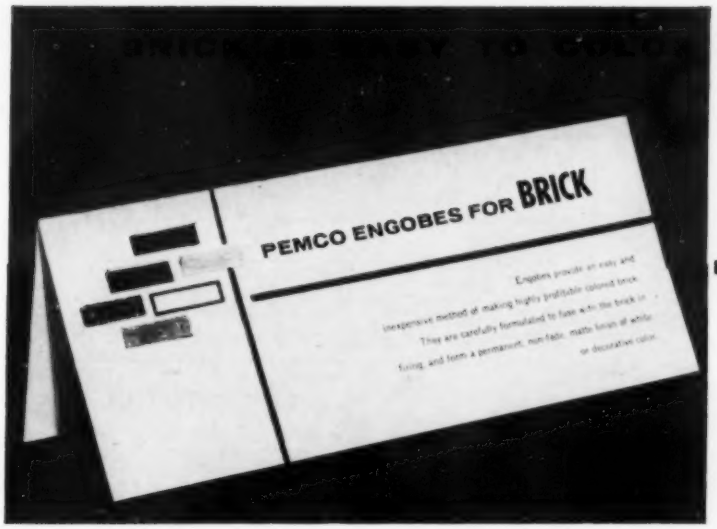

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Continued from page 114

For certain color effects as in face brick, the oxidation may be done very carefully, and for other color effects it may be retarded as much as possible. For example, the Lower Kittanning Fireclay is used for the manufacture of light buff brick and also for iron spot brick.

Recalls Boyhood in Plant

When the writer was a boy he worked in a plant making light buff brick. The kilns were round down-draft with individual stacks. The body—Lower Kittaning Fireclay—contained approximately 75% natural grog and 25% clay mineral. It also contained carbon, and sulphur and iron in the form of pyrites. The body was very "open" so that water, steam, and oxidation gases could escape rapidly and easily. The clay was high in carbon but the carbon was in such form that it oxidized readily. The iron was below 2% when the clay was properly mixed in the mine.

In firing this clay for a light buff color, the stack was watched carefully. The temperature was run up as quickly as possible until the "white-smoke" began to roll out of the stack in billows. Temperature was held at that point until the "white-smoke" thinned out and almost disappeared. Then the temperature was advanced until "blue-smoke" began to emerge from the stack in a volume that was satisfactory to the boss. The temperature was held at this point till the "blue-smoke" thinned out and practically disappeared. During the first part of "blue-smoking", firing was easy, probably due to the heat generated within the kiln from the oxidation due to carbon. After the blue-smoke diminished in volume, thin yellow smoke appeared and then the temperature was raised slowly until the smoke coming from the stack had a reddish-yellow color. This color came from the oxidation of sulphur. From the time the yellow smoke appeared until it disappeared entirely, the kiln temperature was advanced but very slowly. When the boss could no longer see any yellow smoke the

Continued on page 118

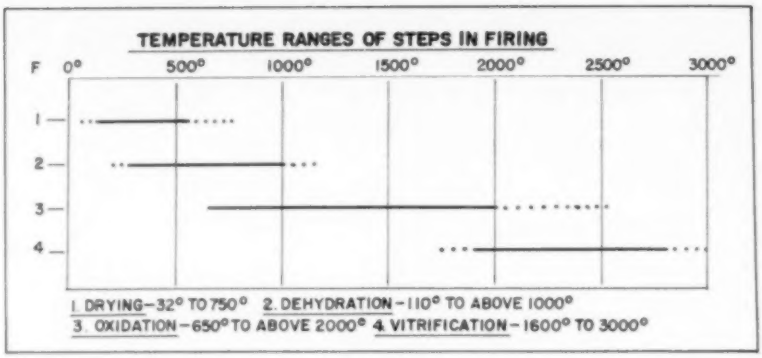

Fig. B-1

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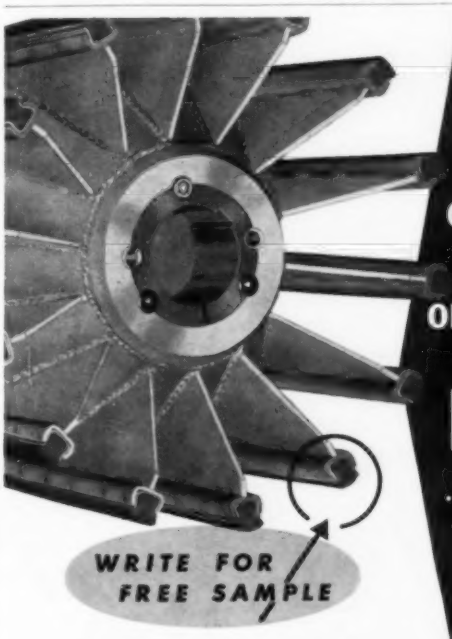

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Continued from page 116

temperature was advanced as quickly as possible to the "soaking" or vitrification temperature. The kiln was finished by the glisten and taste of broken open-draw trials. From time to time, draw trials were taken out and broken and the boss noted the shine of the broken surfaces in the glare of the sun or an electric light. When cool, he tasted the broken surfaces and could judge the degree of vitrification by the way his tongue stuck to the broken surfaces.

Develops Light Buff

The above firing schedule, or process, was followed in order to develop a clear, light buff; or a clear grey if manganese had been added to the clay. All through the process the fire were kept as "clear" as possible and the kiln atmosphere contained excess air at all stages of firing.

The same clay was used for "iron spot" brick. In this case about 3% of iron mill scale was added to the clay. At no time during the firing were the gases permitted to be oxidizing" and they had to be "reducing" all the way. The boss wanted to see black smoke coming from the stack from the very beginning to the very end of the firing period.

Just what happened to the carbon and the sulphur in the clay under these firing conditions is not known to the writer. These brick came out with a pinkish-red background with black splotches all over the faces due to the fact that the iron scale particles had been reduced rather than oxidized. These brick were "flat-set" so that iron splotches did not weld into adjacent iron spots, and they were heavily sanded between courses to prevent sticking of bed sides.

As a word of warning, if you have a buff firing clay, do not try this type of firing unless and until you have previously determined that unoxidized carbon and sulphur will not bloat your brick. The body must be "open" in nature and "non-swelling" from unoxidized carbon and sulphur. Many brick, if fired under reducing conditions like this will swell up and come out of the kilns looking like footballs.

Fire Under Certain Conditions

Some refractory brick for certain purposes are better if fired under oxidizing conditions. For other purposes it does not matter if they are fired under oxidizing or reducing conditions. However, for certain refractory purposes, if the brick are fired under reducing conditions they are better in end use. Some refractories, when fired in reducing conditions, have a better resistance to thermal shock, and some, if fired under extremely reducing conditions, have a greater resistance to erosion from gases at high temperature and high velocity.

A very famous chemical brick in the past, the English "Ayreshire Blue Brick" was fired under reducing conditions and then cooled in a reducing atmosphere. Merely to close up a kiln tightly upon completion of the firing will not permit the brick to cool under reducing conditions because the interstices between the brick are actually full of hot air. If, while cooling, the interstices between these brick are kept full of reducing gases or some inert gases, or volatilized oil until the kiln has cooled below a red temperature, oxygen is kept out and re-oxidation is prevented. Best results in the manufac-

Continued on page 120

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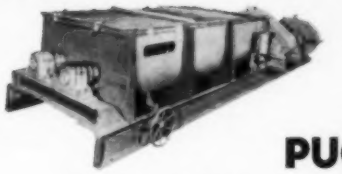

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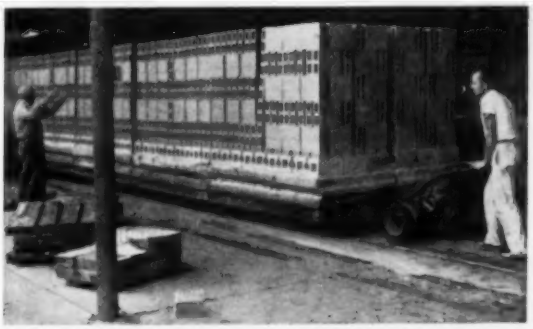

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ture of "carburized" brick are secured by cooling in a reducing atmosphere.

Quick cooling of flashed face brick will hold the "flash" but slow cooling often results in losing the flash through re-oxidation by the hot air in the interstices between the brick in the setting.

The manufacture of lightweight aggregate from clay or shale might be classified under "Heavy Clay Products."

In the burning of lightweight aggregate from clay or shale, the water smoking and the oxidizing period should be omitted entirely, or it should be reduced as much as possible. According to research organizations who have worked on this product, if watersmoking and oxidation are completed as is done traditionally in the burning of brick, before the vitrification temperature is reached the vesicular development in the particles will be poor. In firing for lightweight aggregate, the temperature of the mass should be raised as quickly as possible to finishing temperatures for best results.

In the firing of heavy clay products one should be familiar with tradition, but one should be prepared to part from tradition whenever, and wherever such departure improves the product.

(Continued Next Month)

Next month Seanor discusses how mass setting complicates the firing problem, and the volume of gases required in kiln firing. Future articles will give Seanor's discussion of pressure required in kilns, how to provide the right volume of kiln gases, the right temperature, and how to apply kiln gases uniformly.

[1]Trinks, W., Industrial Furnaces, Vol. 1, John Wiley & Sons, 1934, page 6

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For many years A. P. Green Fire Brick Co. has used Eagle Preliminary Double-Roll Crushers. Recently an Eagle Standard Crusher was installed at their Troy, Idaho plant. Refractory makers almost universally depend on Eagle Crushers. Slow turning spiraled hooked tooth feed-in roll and opposing fast turning slugger roll quickly reduce hardest shales—prevent throat from choking—eliminate need for grates which wear and clog. Low head room requirements make installation possible in cramped quarters. Send for complete story—Bulletin 952.

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EAGLE IRON WORKS
131 Holcomb Ave., Des Moines, Iowa
Grinders • Dry & Wet Pans • Shale Planers

Circle Service No. 97

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Big saw features in a portable unit. Use it on scaffolds, inside boilers, on your truck, on a bench. 1, 1½ and 2 horsepower models.

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JEfferson 1-6688

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NOTICE!

Dealerships available in some areas. Write or phone for information.

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BRICK and CLAY RECORD

5 South Wabash Avenue, Chicago 3

WANTED—HELP

BRICK plant superintendent for face brick plant in Ohio. Tunnel kiln operation. Ceramic degree preferred but 10 years production experience acceptable. Address Box 4-AAQ, care of Brick & Clay Record.

WANTED—Assistant superintendent for small brick plant in Oregon manufacturing face brick, excellent opportunity with good pay. In replying state complete background in brick industry in detail. Write Box 5-AAY, c/o Brick & Clay Record.

CERAMIC ENGINEER

For research in heavy clay products. Previous research experience desirable. No age limitation. Good opportunity for right man. Laboratory located in small Midwestern town. Send personal and experience resume to Box 5-AAX BRICK & CLAY RECORD.

PRODUCTION MEN—Experienced in tunnel kiln operations. For service work with kiln builder leading to full time production work. Box 6-ACV, Brick & Clay Record.

CERAMIC ENGINEERS (or equivalent in experience) with kiln design or construction experience. Exceptional opportunity for qualified men with progressive organization. Send full details to Box 6-ABG, Brick & Clay Record.

SOUTHWEST PLANTS EXECUTIVE OPPORTUNITY

Acme Brick Company, pioneer Southwest clay products leader with multi-plant operation, has opening for Division Plant Superintendent. Executive will direct the operation of six plants through Division Staff and Plant Superintendents.

Ceramic Engieering degree necessary, and brick and tile manufacturing experience desirable. Current dynamic re-vitalization and expansion program makes this an exceptional career opportunity.

SEND COMPLETE RESUME TO M. L. VAUGHAN, MGR. PERS. & IND. REL'S., ACME BRICK COMPANY, BOX 425, FORT WORTH, TEXAS.

Also growth opportunities for graduate ceramic engineers.

PRODUCTION SUPERINTENDENT, HEAVY CLAY PRODUCTS. EXCELLENT OPPORTUNITY FOR ADVANCEMENT, STARTING SALARY $12000.00 A YEAR. Write Box 6-ABJ, c/o Brick & Clay Record.

Brand new most modern Brick and Tile Plant with tunnel kiln under construction outside of Mexico City, looking for energetic and thoroughly experienced superintendent. Excellent salary and profit sharing. Please give complete resume and references in first letter. Write Box 6-ABH c/o Brick & Clay Record.

PLANT MANAGER to build and operate Brick Plant in Old Mexico 7 miles from Texas border. Must be thoroughly experienced and able to work without immediate supervision. Bunker Hill Brick Co., 7620 Washington Ave., Houston 7, Texas.

POSITION WANTED

Ceramic Engineer, age 43, with seventeen years diversified refractories experience will accept any type plant work at reasonable salary to live south. Make your offer. Write Box 6-ABF, c/o Brick & Clay Record.

Ceramic Engineer with 15 years experience in production of structural clay products desires responsible position with progressive concern. Write Box 6-ABD c/o Brick & Clay Record.

Laboratory technician, experienced in preparation and application of glazes for bricks, also experienced in body trials and all other common brick bests, desires position with responsibility. Age 30, married, one child. Please write to Box 6-ABK, c/o Brick & Clay Record.

Position Wanted as Plant Manager or Supt. with progressive Face Brick manufacturer. Highly skilled in tunnel kiln operation and all phases of production. Details and qualifications upon contact. Write Box 6-ABE c/o Brick & Clay Record.

FOR SALE—USED EQUIPMENT

RAILS AND DRYER CARS

250 Single Deck Dryer Cars
40 Triple Deck Dryer Cars
50 Rack Cars

All sections rails and track supplies. New Wood Pallets made to your specifications.

M. K. FRANK

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FALL BARGAINS

DE-AIRING MACHINES, #30 JC Steele FRH #6WJ6, Bonnot Combination, Chambers #9C, American 404-A, International #470, International Falcon.

CUTTER, Steele #18, Model BLH, Freese C-25, and C-20.

ROLLS, Disintegrating, Steele 24 x 24, 12 x 24, smooth roll 18 x 24.

DRY PAN, 9' Stevens, 9' Bonnot.

SCREENS, Tyler Hummer, Cedar Rapids, Sturtevant.

DRYERS, Rotary. Various sizes from 2x30 to 8 x 175.

FERNHOLTZ MACHINERY CO.
8468 B Melrose Place
Los Angeles 46, California

FOR SALE— USED EQUIPMENT

1.) 200 single deck dryer cars 24" gauge, slats running crosswise for package setting.
2.) Approximately 40 triple deck cars, slats running lengthwise.
3.) One Chambers twin tub pugmill without drive or clutch.

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BRICK MACHINES: FRH Jr. Steele 30, 40, 50. Intl Vac-Aire 491: Others: Steele #1, #2, 5A, Ray.
Freese GH, 10' Pug & E18 Disc Feeder.
Boyd 4 mold, Gates 2 mold DRY PRESSES
4, 5, 6, 8, 9' DRY PANS. 8' WET PANS.
MILLS: 10, 11, 12' PUG. Raymond 5047 Roll. 2424, 3630, 3650 Dixie. #30, #40 Williams Hammer. 5x17, 5x21 Ball.
CONVEYORS: 18", 24", 30", 42", 60" all lengths.
DRYERS: 2x12, 3x15, 4x20, 4x30, 5x24, 8x70
TUNNEL KILNS: Ladd Cronin circular 70' dia. Four 123-150' long.
500 sql. deck DRYER CARS 24" & 26" ga.
6-Crossley 24x24" FILTER PRESSES
Steel Buildings 30x90', 80x220'

MID-CONTINENT EQUIPMENT CO. INC.
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DESIRABLE EQUIPMENT AT REALISTIC PRICES

Crushers and Hammer Mills
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Rotary Dryers and Kilns
Sifters, Screens, Separators
Filter Presses and Filters
Ball & Pebble Mills
Raymond Imp Mills, All Sizes
Presses and Pellet Machines

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FIRST MACHINERY CORP.
209-10th St. Bklyn. 15, N.Y.
ST. 8-4672; Cable "Effemcy"

STOP GREEN SCUM

Insure Permanent Color-Control On Light Face Brick with MINERVA FLUORSPAR

Minerva Fluorspar vitrifies brick at low temperatures. Prevents migration of vanadium salts to surface of brick where it oxidizes to form green scum.

COSTS APPROX. 50c per ton of clay. Send for free booklet and free Test Sample. Write Today to

THE MINERVA COMPANY
FLUORSPAR DEPT. B-6-6
ELDORADO, ILLINOIS

WALTER C. STOLL & SONS

New and Used CLAY WORKING MACHINERY

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CApitol 2-1141

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BRICK & HOLLOW TILE MACHINES—Dealring & Non-dealring
PUG MILLS—Single & Double Shaft
GRANULATORS—Chambers 51 & Freese 16
CUTTERS—Steele 18, Freese & Hand Drain Tile
DRY PANS—7', 9'
HAMMER MILLS—Many Sizes & Micro
CONICAL ROLLS—Chambers #10
SMOOTH ROLLS—16x30, 30x36, 16x10
DISINTEGRATORS—12", 18" & 24"
JAW CRUSHERS—24x13, 24x36, Lab Size
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5" LAB PUG MILL EXTRUDER
LAB SIGMA BLADE MIXERS

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ROBERT L. CLARE

212 Rector St. Perth Amboy, N. J.
Phone Hillcrest 2-0061

FOR SALE: Two Nine Foot Dry Pans—One Hammer Mill For Fine grinding—One Disintegrator—One Steele No. One Brick Machine—Drain Tile Cutters—One Steele Star End Cutter Complete—One J. C. Steele No. 40 Combination De-Airing Brick and Tile Machine. Bill Taylor, Sulphur Springs, Texas.

DE-AIRING MACHINES—FRH (PA4) 3HP—FRH (PR6) 7½HP—J. C. Steele 50 Special, 15" auger 100 HP—Bonnot 18" auger 150 HP—American (801) 18" auger 200 HP

CUTTERS—Automatic Reel—J. C. Steele #18—Freese P25, 10" belt—Chambers #10, Roman & Norman brick

PUG MILLS—9' Freese—10' American (2nd shaft)—15' Granulators Freese/Chambers

DRY PANS—7' American—9' Bonnot—2 American 418 grinders

DRYERS—24" x 24"—3' x 24'—5' x 40'—6' x 20'—7' x 58' (50 HP gearmotor)

CRUSHERS—DISINTEGRATING—18" x 16", 24" x 12"—30 x 16—24 x 30

LAWLER COMPANY

Metuchen, N. J. Liberty 9-0245

Going out of business. Must sell immediately.
Steele #18 Automatic Brick Cutter—used very little.
New Reel Complete—still in crate, for cutting oversize brick for above cutter.
150 HP GE 450 RPM Motor.

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1519 East Avenue K, Lancaster, California
Phone WHitehall 2-3098

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1—Symons 3' shorthead Cone Crusher
1—Buchanan 13" x 24" Jaw Crusher, 50 HP
13—Abbe Eng. 6' x 8' Pebble Mills
1—Allis-Chalmers 6' x 18' Pebble Mill
2—Hardinge 7' x 36" conical Pebble Mills
3—Steel Bucket Elevators, up to 50' high

SEND FOR CIRCULAR

3—10' dia. x 78' long Rotary Dryers, ¾" shell
2—8'8" x 70' Hardinge #XA-18 Rotary Dryers
1—Kennedy 7' x 9' Contin. Ball Mill
1—Allis-Chalmers 5' x 5' Ball Mill, 75 HP
1—Vulcan 10' x 11' x 175' Rotary kiln, 13/16" shell

PERRY EQUIPMENT CORP.
1432 N. 6th St. Phila. 22, Pa.
POplar 3-3505

Side Dump Cars: 120—1½, 2, 3 and 12 Yards
Gasoline Locomotives: 4, 6, 8 and 14 tons
Diesel Locomotives: 6, 10, 25, 45, 65 and 80 tons
Smooth Roll Crushers: 7, C. Steele 12" and 18"
Automatic Cutter: Freese Model C-25
Rotary Dryers & Kilns: 4'x20', 5'x30', 5'6"x50', 80"x60', 6'x120', 7'x180', 8'x125", 10'x200'
WANTED—Air Compressers—Dryers—Locomotives

R. C. STANHOPE, INC.
603 42nd St. New York 17, N. Y.

1-Toronto 6' Type "C" Dry Pan with 20 HP chain drive with new screen plates and all new wearing parts. Can be converted to Wet Mixing Pan. Good condition, rebuilt and guaranteed.

THE TORONTO FOUNDRY & MACHINE CO.
Toronto, Ohio

WANTED—USED EQUIPMENT

Wanted to buy 1 used automatic drain tile cutter with 13½" cut. Two cut sizes to include 8". The Delphos Clay Works Co., Delphos, Ohio.

WANTED

1 American Clay Rotary Press
Model No. 516 or later
State Condition and number of spare parts.

HARBOUR BRICK CO., LIMITED
400 Mount Pleasant Road, Toronto 7, Ont.

MISCELLANEOUS

For Sale—Lower Kittanning buff burning plastic Fireclay. Mine run, crushed, or ground. Consolidated Clay Mines Negley, Ohio.

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Frogs & Switches
Track Accessories
W. H. DYER CO., INC.
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Representative—Engineer
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Car Tunnel Kilns—Dryers

P.O. Box 537, Dallas, Texas
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T. W. GARVE, P.E.
69 W. Weisheimer Rd.
Columbus 14, Ohio
Engineering Service. Clay Testing
DRYERS & KILNS TO FIT

We have designed every type of kiln for every kind of fuel and ware, TO FIT.

FOR SALE—BUFF BURNING FIRE CLAY, lump or ground. Ask for prices at mine or delivered via truck or railway. Boos & Co., Macomb, Illinois.

CERAMIC INDUSTRY CONSULTANT
SURVEYS EQUIPMENT SPECIFICATIONS

JOHN M. DICKEY, JR., P. E.
Consulting Engineer
Technical-Production-Engineering and Management Services
Windy Knoll, Brookville, Pa.

FOR SALE—PLANT

FOR SALE—PLANT SITE—90-acre clay deposit in metropolitan Houston suitable for tile or brick. Complete market survey and engineering report demonstrate 60% of local demand is imported from outside Houston area. Write Longhorn Brick and Clay Products Company, 505 Scanlan Building, Houston 2, Texas.

For Sale—large undeveloped fire clay deposit. Suitable for tile or brick. Located in Pennsylvania. Make offer. Address Box 6-ABC, c/o Brick & Clay Record.

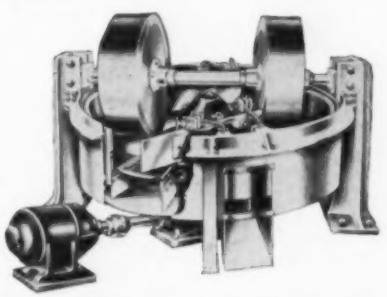
GOING to retire from business. Have fire Brick Plant for sale 6 kilns ample fire clay for several years have buff & red burning clay & shale for face brick. Have R. R. Sidings about 24 miles from Birmington on Southern R.R. paved road within half mile of plant up to our property. Any one interested write to James Bibby, Route 2, Box 189, Dora, Ala.

Call FERNHOLTZ First!
Fernholtz Machinery Co., 8468 Melrose Pl., L.A. 46
OL 3-2360

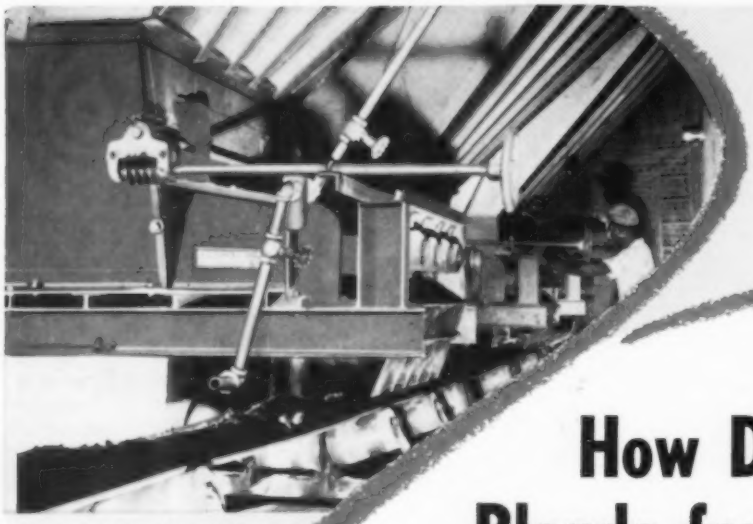
Clearfield's New Model 900 Dry Pan

The new high-efficiency Model 900 Dry Pan by CLEARFIELD assures lower production cost and easier maintenance with its totally-enclosed direct motor drive. The new model comes in 8½ or 9-foot diameters. Vibration is reduced, less power needed, and maximum crushing area is covered per revolution. All parts durably constructed for long-life service with minimum maintenance.

Ask for free bulletin 900 DP



FERNHOLTZ MACHINERY CO., 8468 MELROSE PLACE, LOS ANGELES 46, CALIFORNIA
Circle Service No. 98



Battery of 3 Steele No. 88C Even Feeders at the plant of Dixie Brick Co.

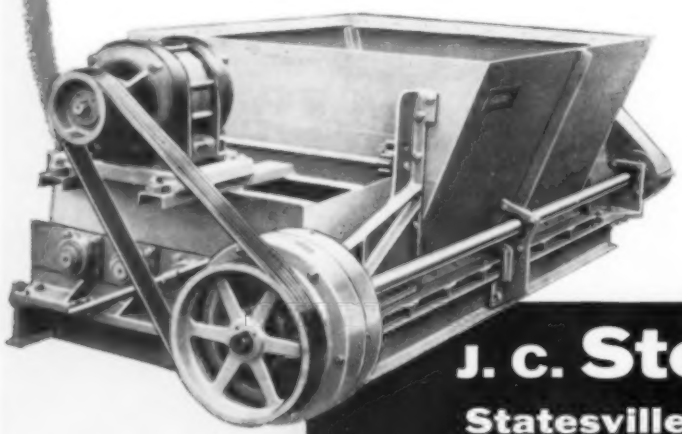
How Dixie Brick Co. Blends for Better Ware

. . . with Steele No. 88C Even Feeders

This battery of three Steele Even Feeders is used to blend three different type soft surface clays, but can be used on any type materials. The blend discharges on a conveyor belt and goes through the disintegrator and smooth roll crushers and then on to the pugmill. They can be used singly, two at a time, as well as a battery of three.

The 88C produces materials at the exact rate desired; screened and dry in some and soft and wet in others, up to about 80T/Hr. Bins can be made large enough for considerable storage clays and shales. Big hoppers, steep sides and the positive force of the spiral shafts prevents arching, choking, gorging, and starving.

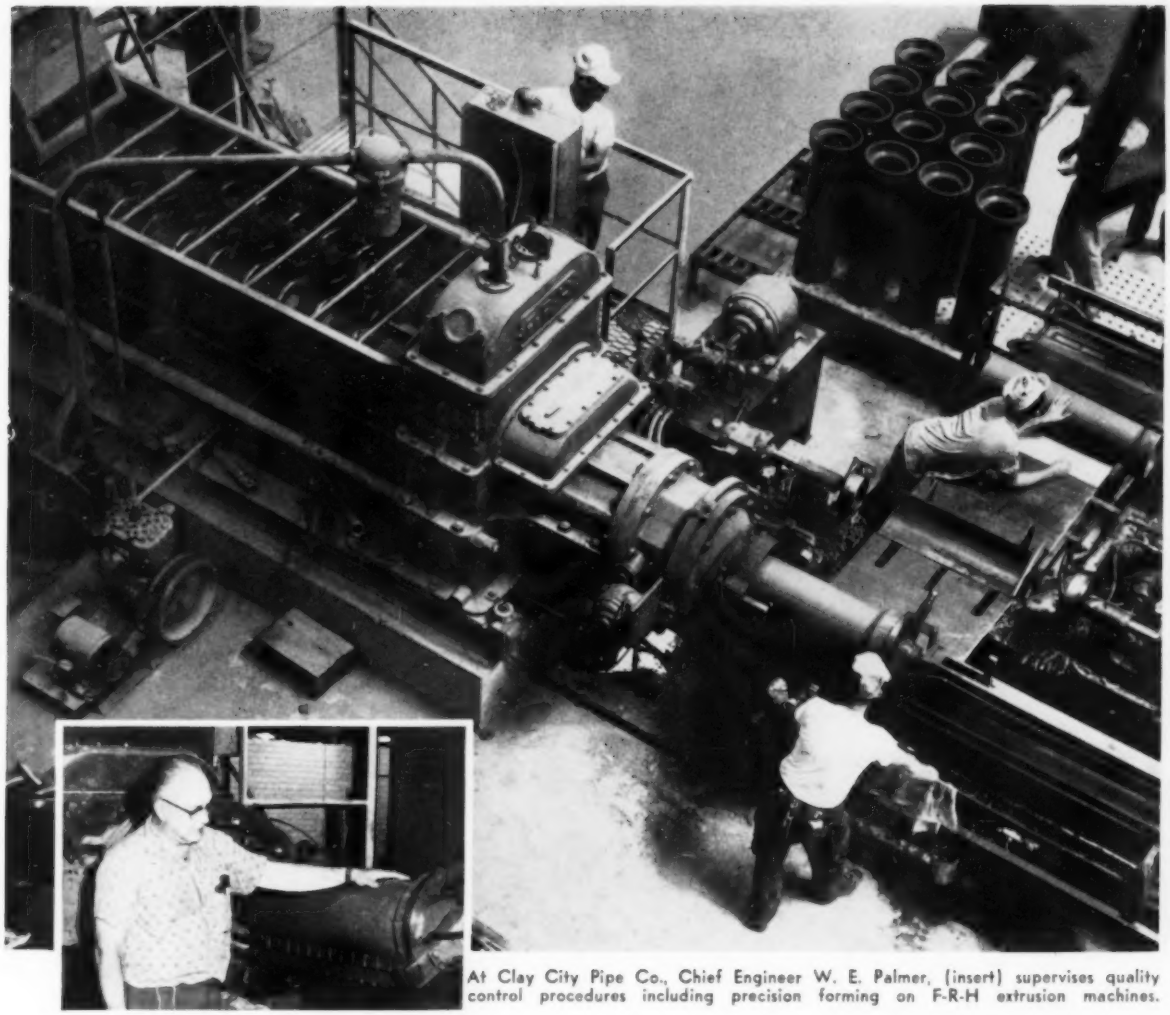
Steele Feeders are also available in the smaller 44C and the larger Double 88C sizes. We will be glad to give you full information on these machines.



Pacific Agent:
Walter C. Stoll
5028 Alhambra Ave.
Los Angeles 32, Calif.

J. C. Steele & Sons
Statesville, North Carolina
The Best in Clay Machinery Since 1889

Circle Service No. 101



At Clay City Pipe Co., Chief Engineer W. E. Palmer, (insert) supervises quality control procedures including precision forming on F-R-H extrusion machines.

"F-R-H Extrusion Machines contribute to production efficiency . . . help to improve product quality"

Reports Clay City Pipe Co., Uhrichsville, O.

Modern forming methods play an important role in the production of high quality sewer pipe at Clay City Pipe Company, Uhrichsville, Ohio. Two production lines employing F-R-H de-airing extrusion machines are capable of turning out 4 to 12-inch pipe, up to 5 feet in length.

Production lines are designed for either automatic or manual operation. In the automatic cycle, an electric control system enables one man to regulate every production step including feeding and spraying, extrusion and pallet-loading operations.

The important contribution F-R-H ceramic machinery makes to the plant's over-all production efficiency is evident in the words of W. E. Palmer, Chief Engineer, who says: "Our F-R-H machines are completely adequate **on all sizes of pipe . . .** overrun the take-off on smaller sizes."

Find out today how F-H-R Brick and Tile Machines can increase production, improve product quality, reduce operating and maintenance costs for **you.** Simply send a brief outline of your operations to The Fate-Root-Heath Co., Dept. B-1, Plymouth, Ohio.

F-R-H
CERAMIC MACHINERY

FOR 100% OPERATING EFFICIENCY — ORDER GENUINE F-R-H REPLACEMENT PARTS DIRECTLY FROM THE FACTORY

Circle Service No. 102

CUTS UP TO 18,000 BRICKS PER HOUR

Big volume cutting with precision accuracy . . . these words best describe the "American" No. 858 Automatic Electric Cutter. This unit will cut brick or tile up to 14"x14". The electric control makes each cut perfect . . . there is no chance for error.

The "American" Automatic Electric Cutter has an hourly capacity of from 3,000 to 18,000 bricks . . . 23 standard bricks per cut. This unit is particularly suited for plants specializing in the production of "SCR" brick.

The "American" No. 858 is a complete unit . . . there are no extras to buy. Wire holders and platens are adjusted easily for any size requirement, and the base adjusts up or down to suit any cross section of clay.

Other features of the "American" No. 858 Automatic Electric Cutter include: magnetic clay bar clamp for perfect cut . . . hinged measuring frame can be lifted to permit die or front change . . . there are no valves or gears . . . anti-friction bearings are used throughout.

The "American" No. 858 Cutter can add to the production efficiencies of your plant. Before you buy check "American" . . . specified as first choice by clay production men.

American CLAY MACHINERY

A Division of HUBER-WARCO COMPANY
Marion, Ohio, U.S.A.

Plants in Marion and Bucyrus, Ohio
Cable Address: HUBARCO

OVER A CENTURY OF EXPERIENCE IN THE MANUFACTURE OF CLAY MACHINERY

Circle Service No. 103